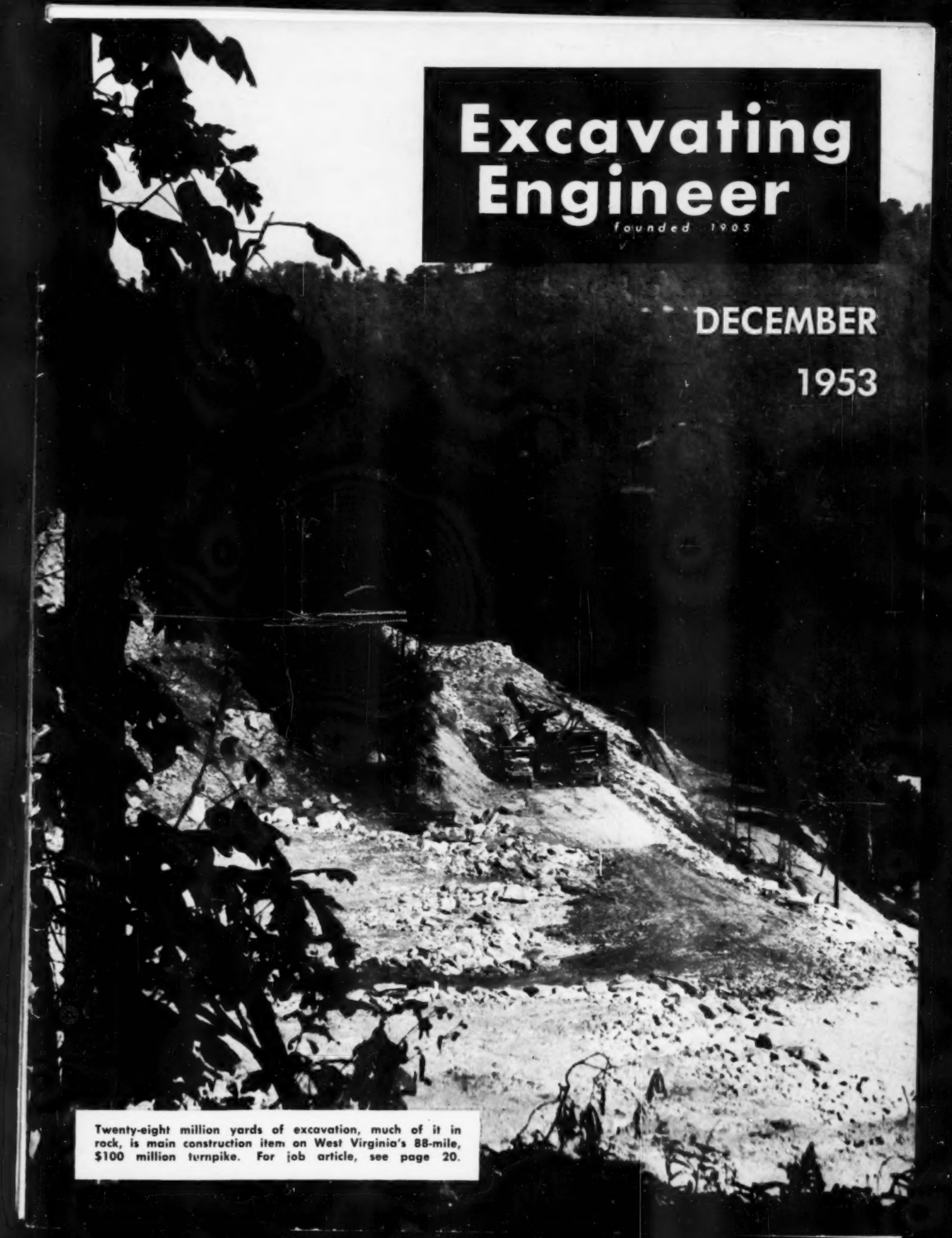
Excavating Engineer

founded 1905

DECEMBER
1953



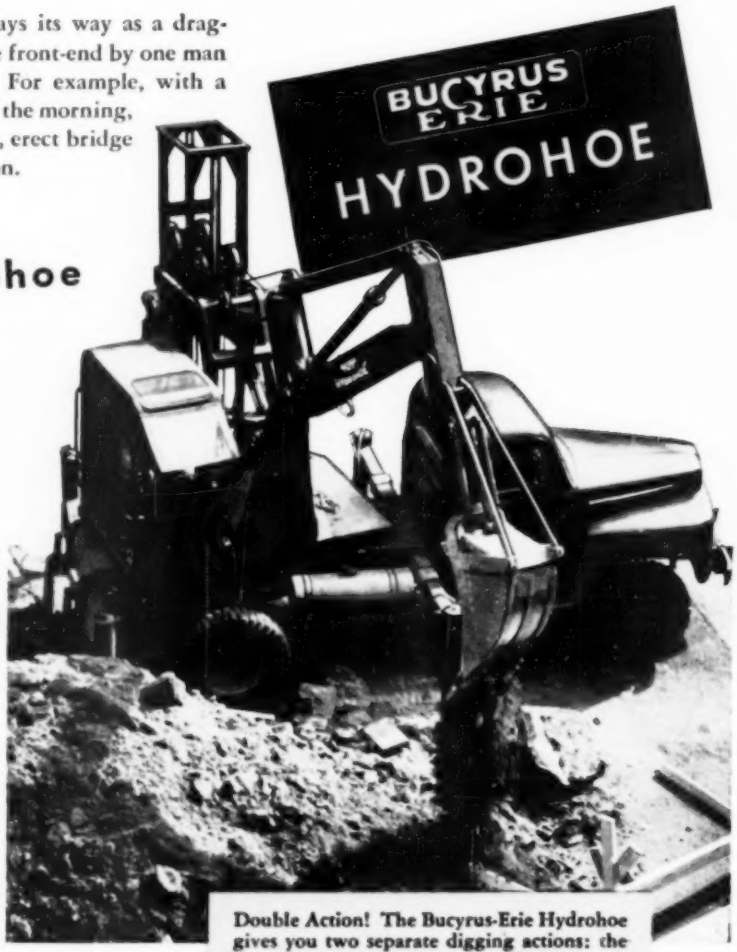
Twenty-eight million yards of excavation, much of it in rock, is main construction item on West Virginia's 88-mile, $100 million turnpike. For job article, see page 20.

Double-Action DRAGSHOVEL WITH A QUICK-CONVERSION BONUS

THE Bucyrus-Erie Hydrohoe not only pays its way as a dragshovel, but it has been converted to crane front-end by one man in less than one hour (actual time test). For example, with a Hydrohoe you can dig trenches or footings in the morning, then convert to crane front-end and set pipe, erect bridge sections or handle road forms in the afternoon.

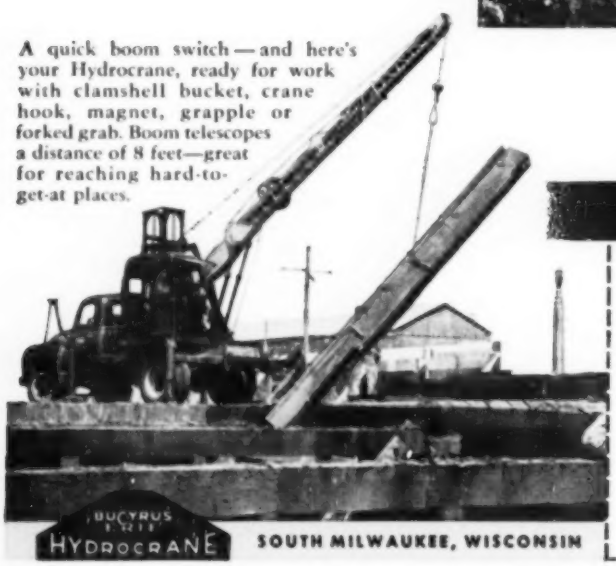
Look at these Hydrohoe Advantages

- **Telescoping boom eliminates up to 40 percent of time lost moving up.**
- **Precision control — every work function fully hydraulic.**
- **No bails, sheave blocks or drag ropes to interfere with loading.**
- **By telescoping boom, operator can peel off scallops at grade level — dig a smooth, level trench.**
- **Hydraulic ejector, built into dipper, assures fast, clean dipper dump — makes it practical to use a narrow, 12-inch wide dipper.**
- **Travels up to 50 mph on open highway.**



Double Action! The Bucyrus-Erie Hydrohoe gives you two separate digging actions: the first is the conventional dragshovel action of the dipper moving through its digging arc; the second, a separate horizontal stroke, obtained by telescoping the boom. Unit is available with both 18- and 12-in. wide bucket.

A quick boom switch — and here's your Hydrocrane, ready for work with clamshell bucket, crane hook, magnet, grapple or forked grab. Boom telescopes a distance of 8 feet—great for reaching hard-to-get-at places.



BUCYRUS ERIE HYDROCRANE

SOUTH MILWAUKEE, WISCONSIN

Send coupon for full details

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Gentlemen:

☐ Please send Hydrohoe and Hydrocrane literature.
☐ I am interested in a demonstration.

NAME .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

47H53C

WHAT ARE YOUR BEST BUYS IN TIRES ?

All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

AREN'T they the tires that take your toughest jobs in stride? Those that show you more profits in more work well done? Those that live the longest, most useful lives—with minimum down time for *any* reason?

Here's why so many truck users say the best tire buy is a Goodyear:

Goodyear has built and sold 600 million pneumatic vehicle tires *alone*—more tires for more specific uses than anyone else on earth. That is because the public has learned from experience that Goodyear tires are standouts in all-round performance—*that Goodyears give you extra dependability, extra safety, extra mileage!*

So when you buy or specify Goodyear, you get all this EXTRA value without extra cost! Let your dealer prove it to you. Goodyear, Truck Tire Dept., Akron 16, Ohio.

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

THIS SHOVEL KEEPS TRUCKS ON THE JUMP

The job shown here is an excavation for an addition to St. Benedict's Church, Irving Park and North Bell, Chicago, Ill. You'd call it a tough loading job anywhere you saw it. The material is concrete slab, brick, dirt and miscellaneous rubble from buildings that have been torn down. It's awkward stuff to handle. But Ray Trumbull, Chicago excavator, finds his Cat* No. 6 Shovel keeps five big trucks busy and loads out 800 cubic yards a day.

Mr. Trumbull also owns two Caterpillar HT4 Shovels. He reports: "Our Caterpillar machines stay on the job with low maintenance costs and make our operations very successful."

Watch a No. 6 Shovel at work. Watch it dig in and pick up a good two-yard bucket load. Then time its cycle as it swings to the truck, dumps and returns. You'll see why owners consistently get more production than with other makes of equipment. Every part is built with extra strength, for hard work and long life. Controls are simple to operate.

Ask your Caterpillar Dealer for an on-the-job demonstration. Make him *prove* how these shovels can deliver more yardage, with less down time, at lower cost. Call him today!

Caterpillar Tractor Co., Peoria, Ill.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks ®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

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Excavating Engineer

founded 1905

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Grading contractors hurl a mechanized construction army against the rock and hills of West Virginia in fashioning the roadway for an 88-mile north-south two-lane expressway. Excavation will total approximately 28 million yards.

Shoofly for the SP&S — by Ray Day 28

Hard basalt complicates relocation of railroad through dam area, but modern explosives and excavating equipment solve problems in Washington.

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They have only four machines to farm out, but there is a waiting list for them. Top-notch machine condition and tested operators sell the firm's rentals in Boston area.

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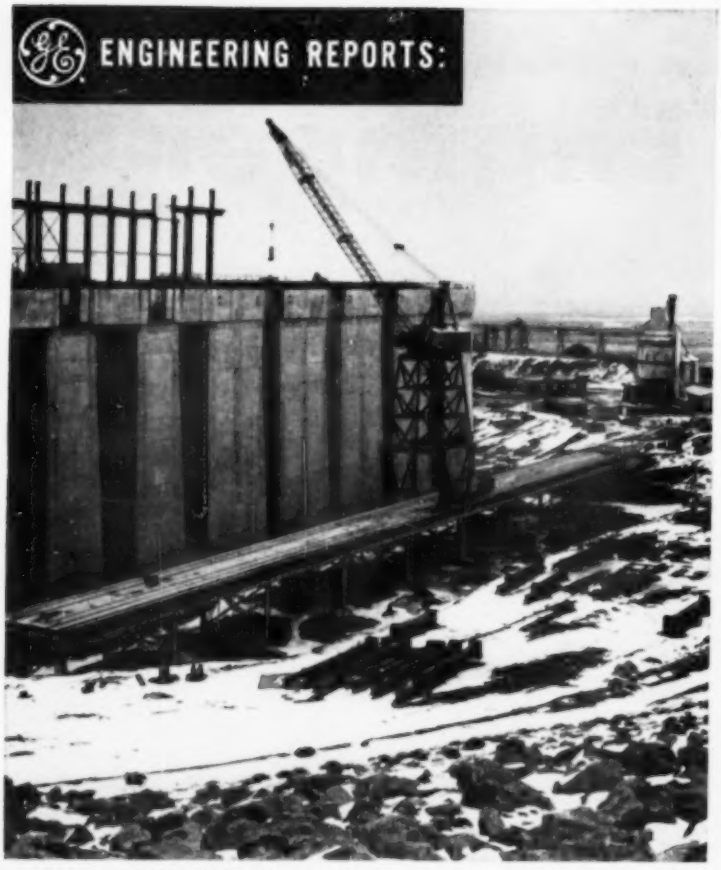
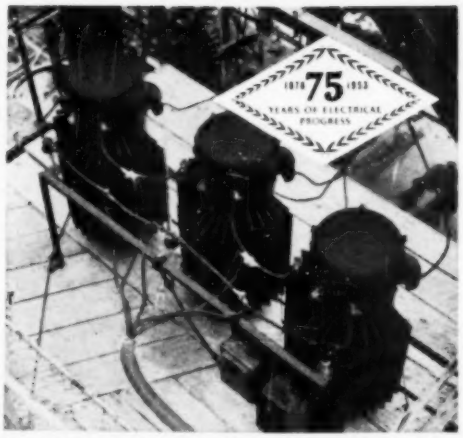
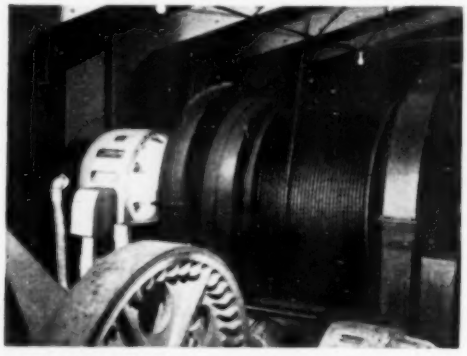


ELECTRICAL CO-ORDINATION provides continuous operation of this revolver crane 100 feet above the base of the huge intake structure. Movement along trestle is powered by a G-E 200-hp Type MR motor at foot of the gantry.



ADEQUATE POWER to maintain smooth, dependable crane performance is stepped down by these portable G-E transformers.



RELIABLE DRIVES must stand exacting demands of this revolver crane. G-E 200-hp motors and control are key to this application.

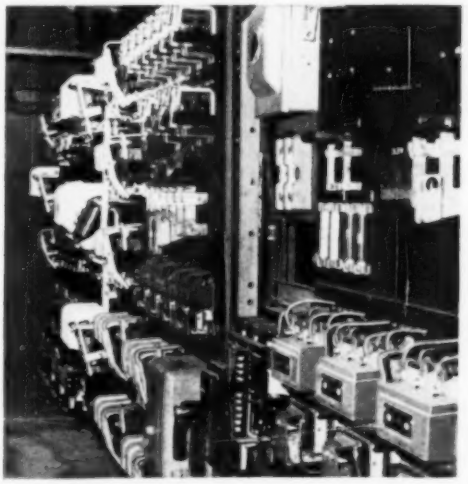
Electricity helps Garrison Dam keep round-the-clock schedule

G-E drives, still on the job after six years, are helping to harness Missouri River

At Garrison Dam near Bismarck, N. D., completely electrified equipment plays a vital role in keeping round-the-clock construction work on schedule. All electrical systems for the project's main stages were designed and co-ordinated by U. S. engineers, Peter Kiewit and Son Co., and Morrison-Knudsen Co. contractors—aided by G-E application engineering. This engineering teamwork resulted in maximum working capacity and fast, smooth operation.

Let G-E application engineers help *you* get the most from your construction equipment through electrification—from the smallest drive to the largest power distribution system. Contact your nearest G-E Apparatus Sales Office. General Electric Co., Schenectady 5, New York.

664-31



CENTRALIZED CONTROL equipment on this compact G-E panel is mounted in the cab for simple one-man operation.

Engineered Electrical Systems for Heavy Construction

GENERAL ELECTRIC

A GOOD CRANE IS GOOD ON ANY CRANE JOB!

Up in the air for the high lifts or out flat for reach! Here is the extreme in each direction. Northwest brings you easy, accurate control that means speed whether on the high, tricky jobs or in the places where a flat boom is the requirement. Uniform Pressure Swing Clutches eliminate the jerks and grabs that cause whipping or set the load swinging. The "Feather-Touch" Clutch Control gives the *feel of the load.* There is a choice of boom hoist equipment for any condition and smoother Northwest steering assures easier maneuvering with the load.

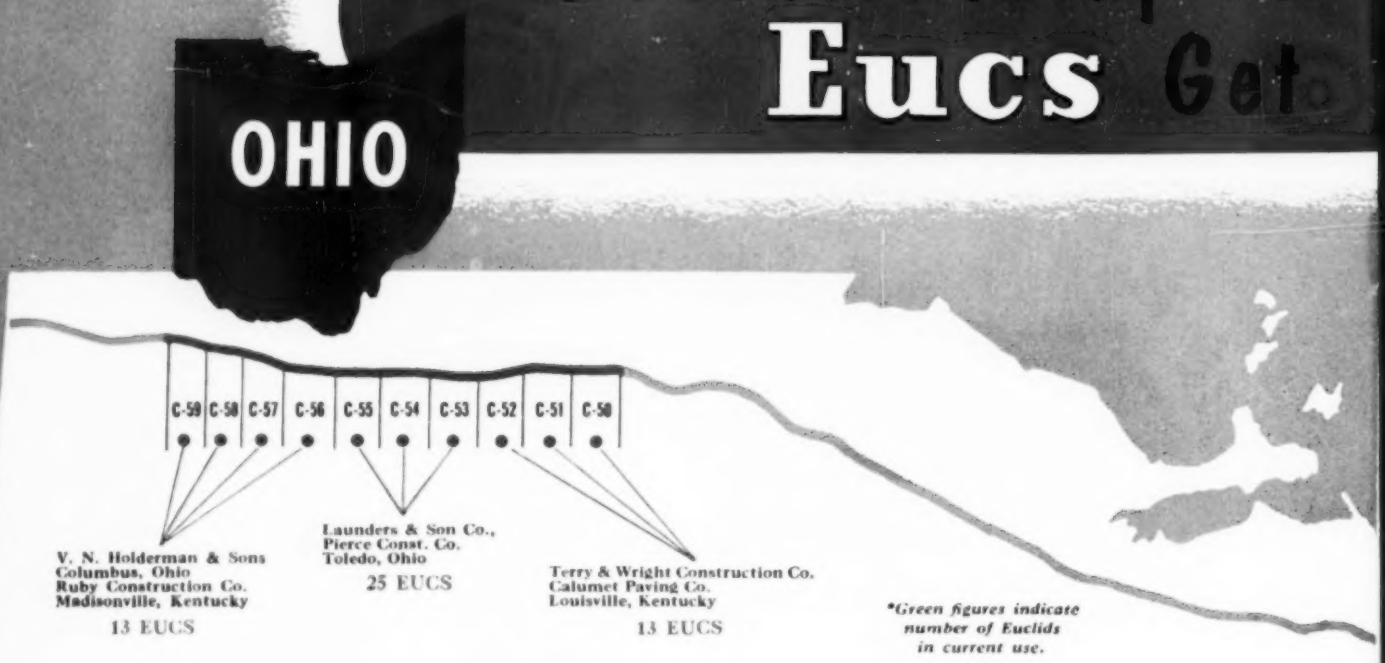
These are just the high spots that make the Northwest a "sweet chariot" to operate and own. Get aboard sometime and get the *feel* yourself. Find out about Northwest Crane performance and its advantages.

NORTHWEST ENGINEERING COMPANY
1506 Field Bldg., 135 South LaSalle Street
Chicago 3, Illinois

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Another Turnpike Eucs Get



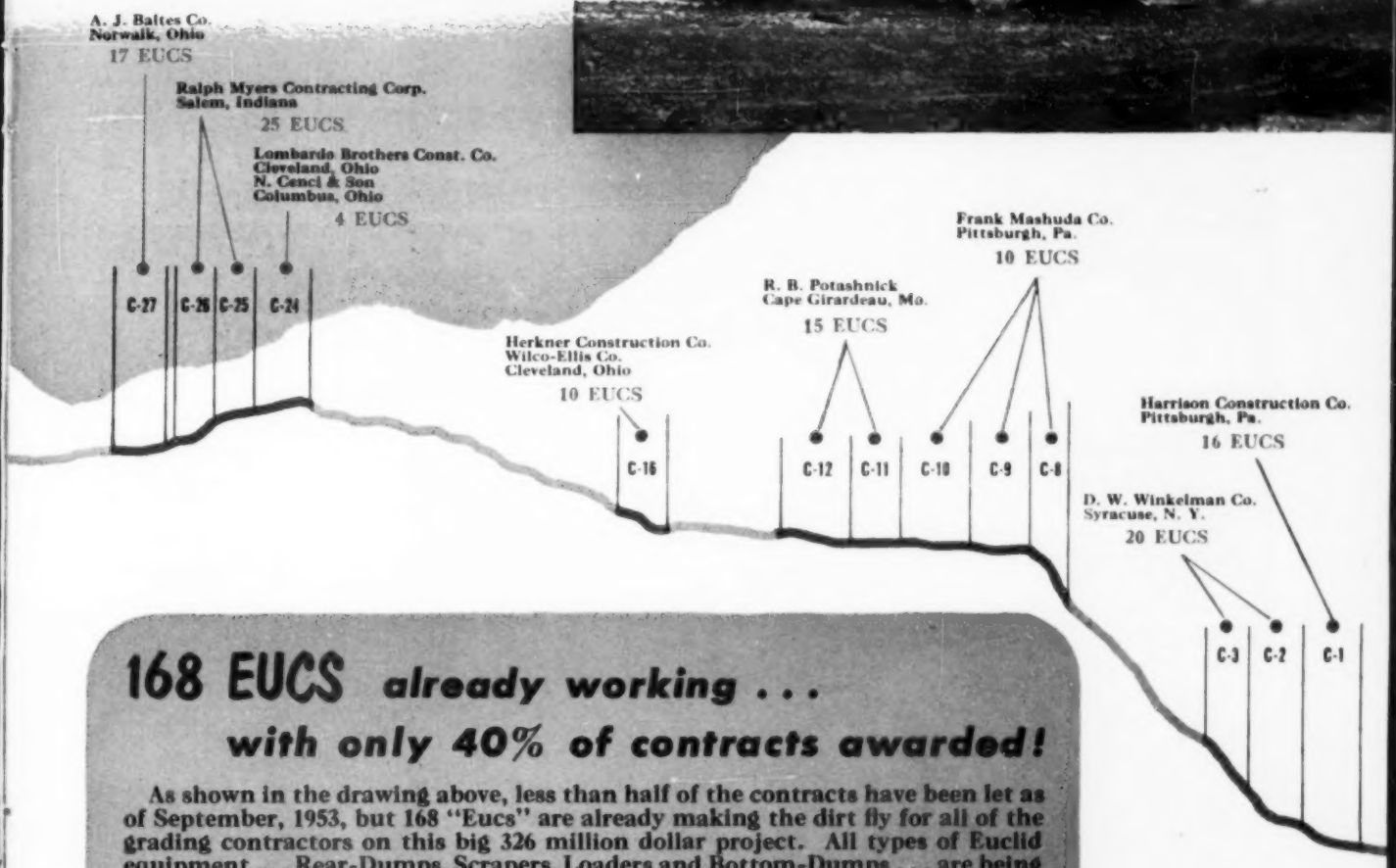
HISTORY REPEATS!

. . . it's "EUCS" on the Ohio Turnpike now!

The new 241 mile Ohio Turnpike, stretching across the state from Pennsylvania to the Indiana border is now under way. Although contracts for only about 40% of the project have been awarded, 168 "Eucs" are already moving earth and rock on the excavation and heavy grading, and many more will move on the job as the work progresses all along the way.

Just as most of the contractors on every new toll road built during the past 15 years . . . in Pennsylvania, New Jersey, Maine, West Virginia, New York, Oklahoma and others . . . have relied on Euclid equipment, contractors working on this newest turnpike are also counting on "Eucs" to get their earth moving done on schedule and at a profit.

. . . and again the Call!



168 EUCS *already working . . .*
with only 40% of contracts awarded!

As shown in the drawing above, less than half of the contracts have been let as of September, 1953, but 168 "Eucs" are already making the dirt fly for all of the grading contractors on this big 326 million dollar project. All types of Euclid equipment . . . Rear-Dumps, Scrapers, Loaders and Bottom-Dumps . . . are being used according to the specialized requirements of every job along the way.

It's not mere coincidence that contractors on practically every big rush earth moving project . . . and on the smaller jobs, too . . . are almost unanimous in their selection of Euclid equipment. They know that Euclid is the pioneer and leader in the earth moving field and that "Eucs" are backed by a world-wide distributor organization with unexcelled parts and service facilities.

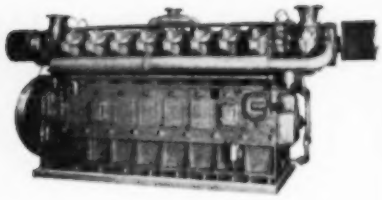
When your competitors have the benefit of high production at low cost provided by "Eucs," you need all of the profit making advantages that can be yours with Euclid equipment. Your distributor will be glad to supply all the facts, so get in touch with him right away.

The EUCLID ROAD MACHINERY CO., Cleveland 17, Ohio

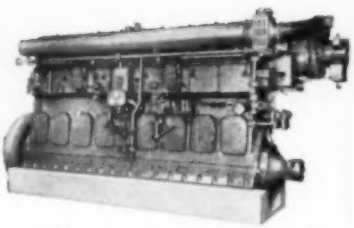
CABLE ADDRESS, YUKLID CODE BENTLEY

Euclid Equipment

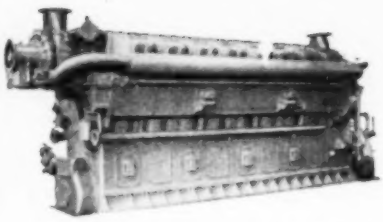
FOR MOVING EARTH, ROCK, COAL AND ORE



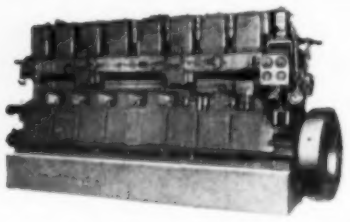
TYPE FVA ..... 8, 12 or 16 cyl.
Diesel — Atmospheric ..... 430 to 1130 hp.
Diesel — Supercharged ..... 1110 to 2230 hp.



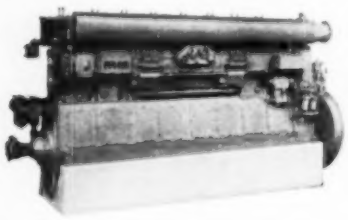
TYPE LS ..... 6, 7 or 8 cyl.
Atmospheric and Supercharged
Gas ..... 720 to 2500 hp.
Diesel ..... 825 to 2500 hp.
Gas-Diesel ..... 825 to 2500 hp.



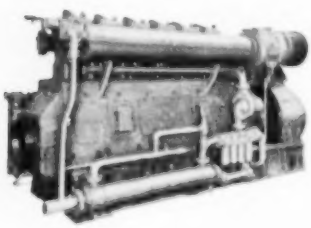
TYPE LSV ..... 12 or 16 cyl.
Atmospheric and Supercharged
Gas ..... 1440 to 5000 hp.
Diesel ..... 1650 to 5000 hp.
Gas-Diesel ..... 1650 to 5000 hp.



TYPE 18 ..... 5, 6, 7 or 8 cyl.
Atmospheric and Supercharged
Gas ..... 375 to 1815 hp.
Diesel ..... 430 to 1815 hp.
Gas-Diesel ..... 430 to 1815 hp.



TYPE GS ..... 5, 6 or 8 cyl.
Atmospheric and Supercharged
Gas ..... 320 to 1480 hp.
Diesel ..... 300 to 1480 hp.
Gas-Diesel ..... 300 to 1480 hp.



TYPE FW ..... 8 cyl.
Diesel — Atmospheric ..... 245 to 500 hp.
Diesel — Supercharged ..... 350 to 835 hp.

it pays to meet power and compressor needs "right on the nose" . . with COOPER-BESSEMERS

• Think a moment about the importance of meeting engine or compressor needs with machines that are exactly *right* for the job. With Cooper-Bessemers you have this assurance, as evidenced by the broad range of units shown here — all standard, proved Cooper-Bessemers, engineered to give *maximum* return in any kind of service you can name, from 300 to 5,000 bhp. Note, too, the flexibility offered by each basic engine type — in number of cylinders, aspiration, horsepower range and fueling.

As important as these things are in meeting your requirements without needless waste *or* shortcomings, Cooper-Bessemers have long been known for additional plus values . . . sturdiness, long life, low maintenance and unmatched efficiencies for lower over-all cost every time! There are new bulletins, yours for the asking, to give you the latest information on Cooper-Bessemer engines or compressors just right for your needs.

MOUNT VERNON, OHIO
COOPER-BESSEMER
GROVE CITY, PENNA.

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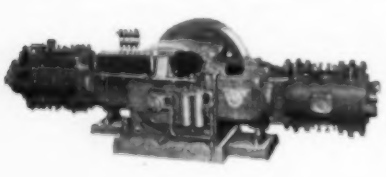


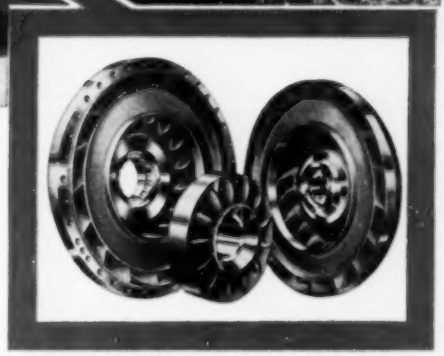
TYPE EM
To 350 hp.
9" stroke
Speed to 514 RPM

TYPE FM
To 1500 hp.
10½" stroke
Speed to 514 RPM

TYPE JM
500 to 3000 hp.
14" stroke
Speed to 327 RPM

...Smoother power!
...Better performance!

with the NEW TORQUE CONVERTER
PAYLOADER®



The big, husky 1½ HM "PAYLOADER", the leader in the field, now further establishes its superiority with the extra advantages of a Torque Converter drive. Gives you extra power for tough going, smoother power at all times, more lugging power, more engine efficiency, for faster, lower cost material handling.

Combined with the 4 speed, full reversing transmission, the Torque Converter provides an unlimited range of automatically selected speeds to meet the load and operating conditions. Parts breakage and maintenance are less because shock loads are absorbed.

More than a year of field testing "on the job" gives you proven performance. It's the finest tractor-shovel available — and we'll prove it! Ask your "PAYLOADER" Distributor for a demonstration or write The Frank G. Hough Co., 708 Sunnyside Ave., Libertyville, Ill.

TORQUE CONVERTER DRIVE

More Efficiency — Engine operates at most efficient speeds — no laboring or stalling

Lower Maintenance — Oil cushion absorbs load shocks — protects vital parts

Easier Operation — Eliminates much gear-shifting and "clutching"

Greater Output — Operates at highest speed in relation to load

PAYLOADER®

THE FRANK G. HOUGH CO. - Since 1920

Big

ANOTHER ADVANTAGE OF BUCYRUS-ERIE

FOR SMALL-JOB PROFITS investigate Hydrocrane, the high-speed truck-mounted, all-hydraulic crane for jobs too small for larger machines. It can be quickly converted to a dragshovel right in the field.

Payloads...

INDIVIDUAL DESIGN

With Bucyrus-Erie Individual Design you get the smooth coordination of hoist, crowd, and swing that assures big payloads on every pass. The operator, working with easily manipulated, responsive controls, finds it easy to heap the dipper, easy to keep those big loads coming all through the shift.

That's because each machine in the Bucyrus-Erie ⅜- to 4-cu. yd. line is designed from the ground up to handle its rated capacity most efficiently. There are no oversize or undersize dippers used to make "different" models. With Individual Design, speed, power, strength and weight are all properly proportioned, and the machine works most efficiently as a whole.

See your Bucyrus-Erie Distributor soon. He'll show you the other great advantages of Individual Design — fast work cycles, low maintenance, long machine life, low operating costs. 20E53C

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

INDIVIDUAL DESIGN . . . for each model in the line

⅜- to 4-cu. yd. gasoline, diesel, and single-motor electric
Shovels, Draglines, Cranes, Clamshells, Dragshovels —
Hydrocranes and Hydrohoes.

GM DIESEL
CASE HISTORY NO. 1A3-12

OWNER: Georgia Coating Clay Co., Macon, Ga.

INSTALLATION: Twelve GM Diesels power shovels, Koehring Dumptors, GMC Trucks stripping 97 feet of overburden and mining Kaolin.

PERFORMANCE: Equip. Supt. W. J. Herrington reports 6-71 powering Koehring 1½-yd. shovel (background) has worked 45 hours a week, 52 weeks a year for over 6 years--about 14,000 hours--without an overhaul. Newer ¾-yd. Lima (foreground), powered by a 3-71, has already operated for 3500 trouble-free hours.

If you're going to STANDARDIZE on

GM
GENERAL MOTORS
DIESEL
POWER

14,000 HOURS
WITHOUT ENGINE OVERHAUL

Long engine life between overhauls is only one advantage you get with General Motors Diesel engines. Power on every piston downstroke makes a 2-cycle GM Diesel accelerate faster under load—gets more work done every hour. Simple, practical design cuts down time because it does away with such trouble sources as high pressure fuel lines. When service is needed, you'll find the cost surprisingly low. GM Diesel engines are easy to work on—simple to inspect and service. And comparison will show you that GM Diesel parts cost less.

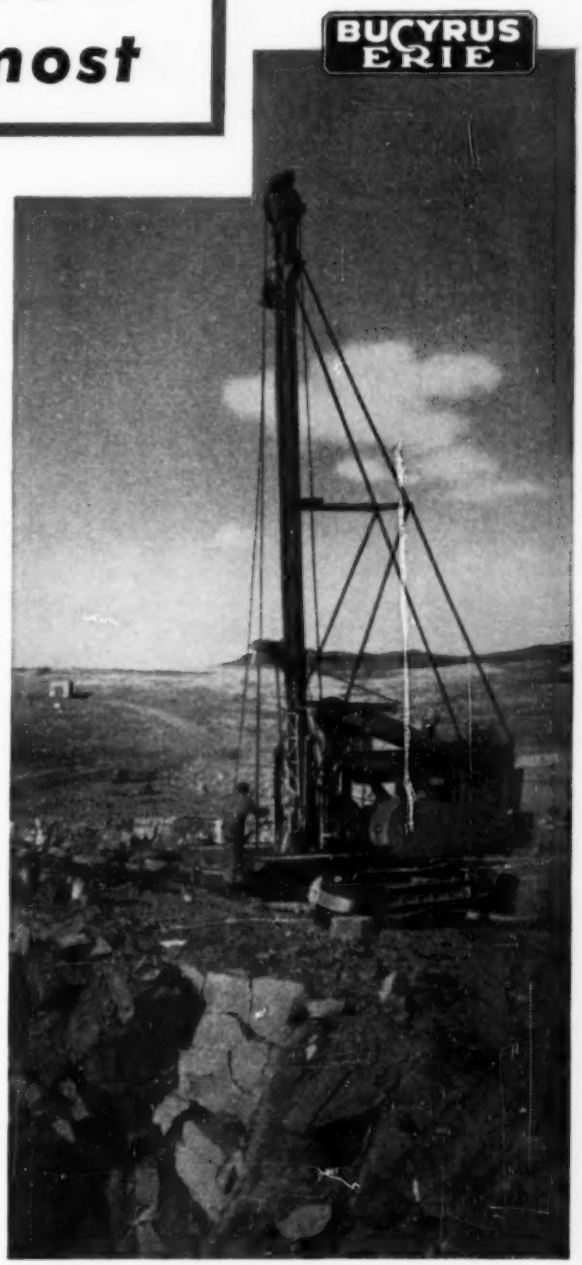
You can get GM Diesel power in leading makes of shovels, tractors, hauling units, loaders, compressors and generators. A postcard will bring you a list of the 750 different models of equipment powered by General Motors Diesel engines.

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines . . . 16 to 275 H.P. Multiple Units . . . Up to 840 H.P.

SPEED where it saves you most

Here a Bucyrus-Erie drill pounds out hole in a rock pit. Derrick head shock absorber protects machinery from vibration — reduces cable wear by keeping shock loads down. A Bucyrus-Erie "first" the rubber shock absorber is the most successful yet devised.



Bucyrus-Erie blast hole drills have a nation-wide record for ramming holes down fast—and cheap. A brief rundown shows why—

Big 5⅝ to 12-in. holes—quick— The right balance of tool travel distance, tool weight, and blows per minute — combined with an unmatched rock shattering snap at the impact point — put these rigs "holes ahead" in penetration speed.

Quick moves — Long, sure-footed crawlers mean fast, easy rolling over rough ground — positive traction up 30 percent grades.

Rapid set-ups — Hydraulic leveling jacks (standard on 50-T; optional on 29-T) eliminate elaborate ground preparations, blocking and cribbing. Built-in stabilizing jacks (on the 22-T, 27-T and 29-T machines) provide time-saving 3-point setups even under adverse ground conditions.

Close-grouped controls — Easy handling levers are positioned close together for convenient reach. A driller can run this rig at top speed for long periods without slow down. Built-in tool wrenches (on all except 22-T) safely speed tool changing.

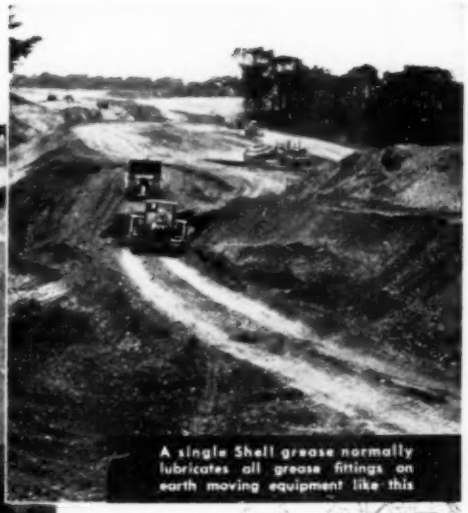
For fast, profitable operation standardize on big hole, fast hole Bucyrus-Erie drills. Four models—5⅝ to 12-in. hole capacities. 8B53C

BUCYRUS-ERIE COMPANY

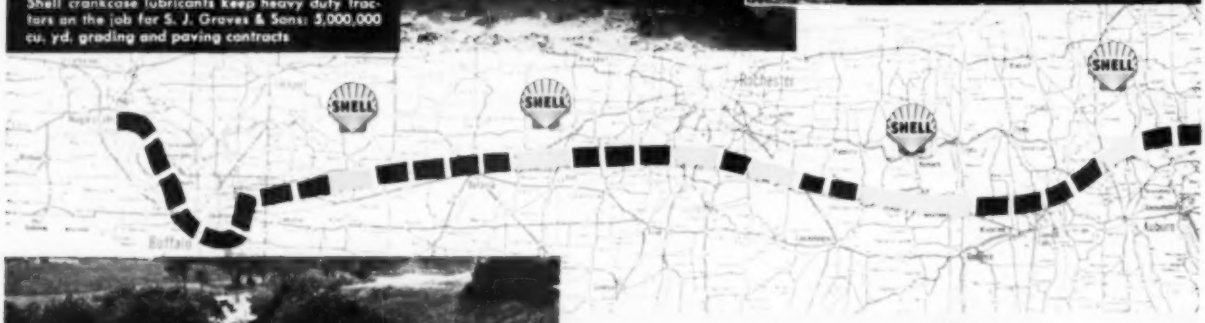
South Milwaukee, Wisconsin

On the New York State Thruway

Shell crankcase lubricants keep heavy duty tractors on the job for S. J. Groves & Sons: 3,000,000 cu. yd. grading and paving contracts



A single Shell grease normally lubricates all grease fittings on earth moving equipment like this



Severe operation causes no motor problem with Shell Heavy Duty oil in the crankcase

Shell E. P. Gear Lubricant takes the punishment during rough going on steep grades

Arute Bros., Inc. depend upon the "stay-put" qualities of Shell's Multi-Purpose Grease for continuous heavy duty work

... 1 out of every 3 construction miles uses SHELL PRODUCTS *exclusively*

That's just one way of saying that Shell has been awarded contracts by companies responsible for building sections of the New York State Thruway totaling over one third of the entire mileage. And the contracts are still coming in!

Trucks, shovels, dozers, graders . . . all equipment run by gasoline or diesel engines on those long stretches of highway construction . . . benefit from the outstanding performance of Shell heavy duty lubricants.

Products that can win the unqualified preference of such responsible and efficient operators must have what it takes . . . and Shell products *have* it . . . plenty!

Most popular on the Thruway, and equally popular wherever heavy duty engines operate, Shell lubricants keep on protecting, defying wear, and keeping maintenance costs at rock bottom. Why not specify Shell for your equipment?

Thruway Map © by General Drafting Co., Inc., Convent Station, N. J.

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HARNISCHFEGER CORPORATION

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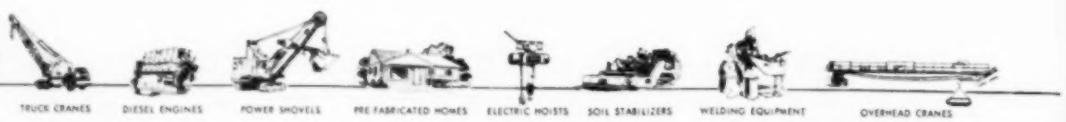

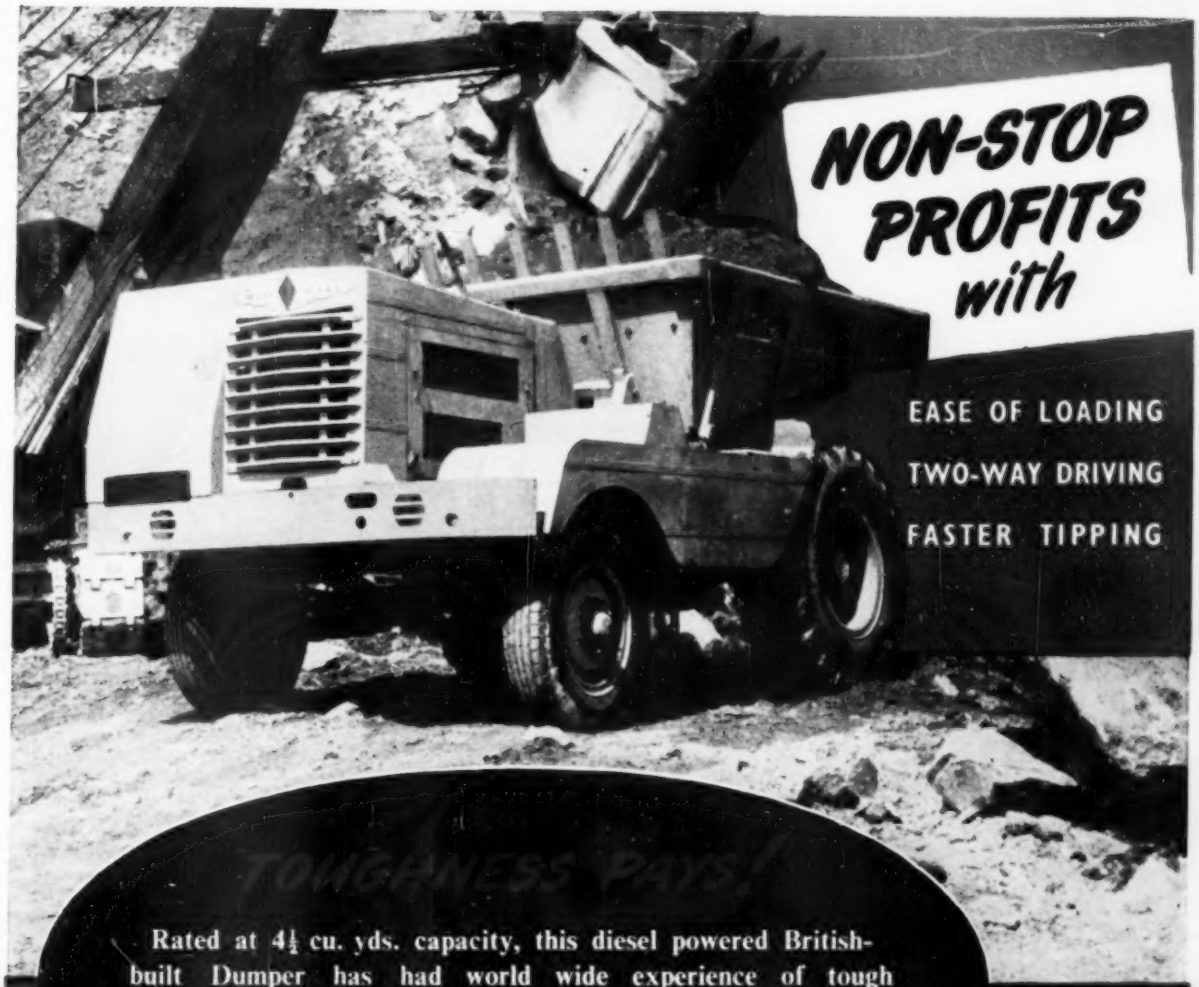

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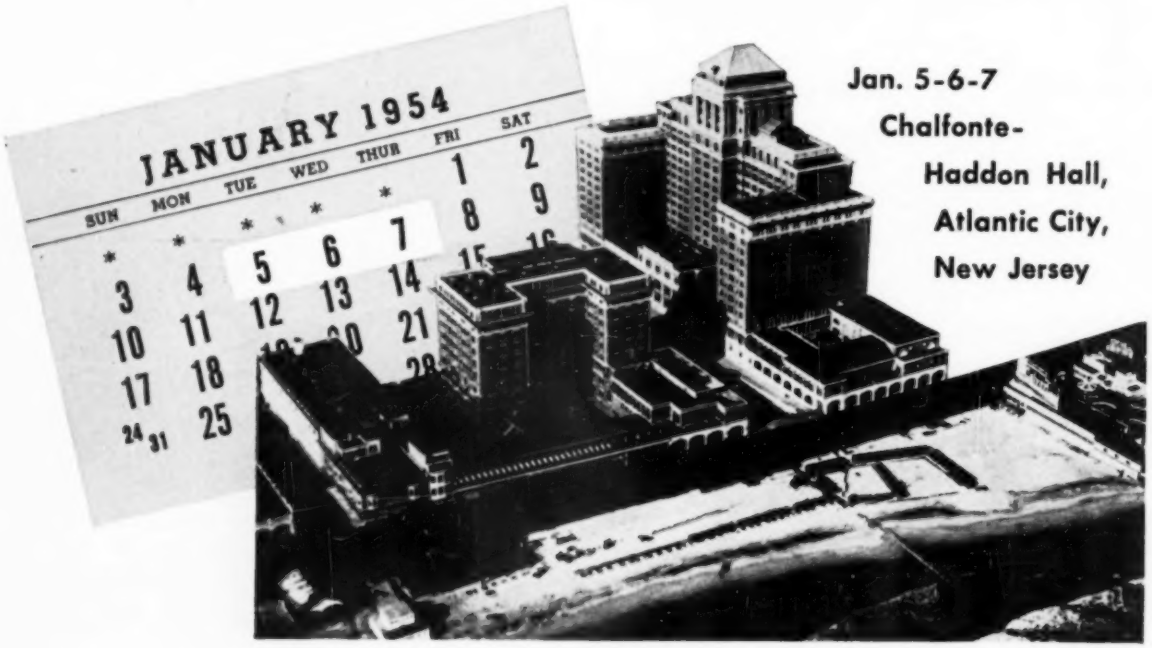

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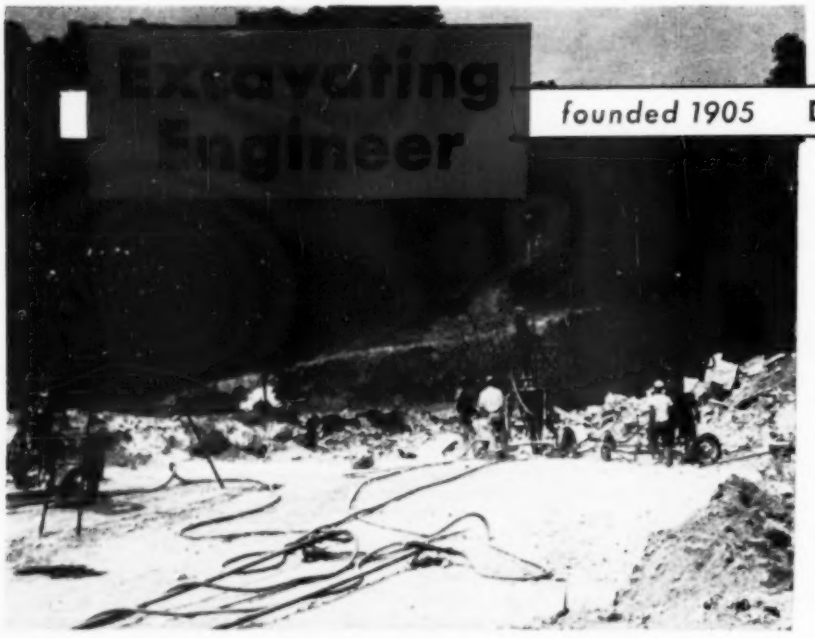


Three Worthington 035-E pneumatic drills put down 2½-in. holes, 18 feet deep, in preparation for blasting hardpan to level roadbed for turnpike near Pax.

W. Va. Turnpike: Conquest of the Hills

FEATURING an array of men and equipment that would do justice to a military operation, the grading and drainage work on one of America's newest major toll roads is nearing completion in West Virginia. More than 75 shovels, cranes and draglines; 170 bulldozers, 90 tractor-scraper units; 300 trucks; countless smaller pieces of construction equipment, and an army of 3,000 workers are combining their talents to slug it out with some of nature's toughest obstacles in building the 88-mile north-south turnpike from Charleston to Princeton.

An excavating pace of better than a million yards of material a week—much of it hard, tough sandstone—has been maintained by the tremendous spread of equipment which constitutes a record concentration of 2½-yd. to 5½-yd. shovels and other heavy machinery for thruway building. Total excavation of all types is estimated at 28,150,000 cubic yards. Roadway and channel excavation accounts for all but 150,000 yards of this total.

Some of the nation's biggest and best known earthmoving and excavating contractors are engaged in the grading and drainage operations on the new two-lane expressway which is being cut through the heart of the rugged West Virginia hill country. In all, 13 major contracts covering the entire 88-mile route are involved. While most of these contracts have completion deadlines which fall in the early spring of 1954, the contractors are generally aiming at cleaning up this phase of the work by about January 1, 1954. Holders of major grading and drainage contracts are listed in the table on page 42. Ray Cavendish, executive director for the Turnpike Commission, reports overall progress as of October 15, 1953 as follows:

Sections 1 & 2 (Princeton & Beckley Districts): Approx. 9,300,000 yards toward total of 13,800,000 yards planned.

Section 3 (Charleston District): Approx. 8 million yards toward total of 14,400,000 planned.

Two-hundred-fifty feet of right-of-way has been purchased for practically the full length of the turnpike except at certain locations where it is apparent that lanes serving traffic moving in opposite directions must be located at considerable distances from each other. Alignments and grades are being established so that eventual dualization can be accomplished at minimum expense. Present grading provides for 25 miles of dualized roadway of the full 88. When the turnpike is eventually dualized, lanes will be separated by a 20 foot median mall or parkway except

Bucyrus-Erie 88-B 4-yd. shovel loads blasted rock to Euclid end-dump on large three-mile cut and fill job being worked in rugged hill country near Mossy, W. Va.

in restricted areas where a 6-ft. median will be used.

The minimum graded width of the roadway is 54 feet. Maximum width (in dualized service areas) is 118 feet. Width varies according to the type of embankment material used.

Because of the deep folds between hills and the high proportion of rock encountered on most cuts, grading and drainage costs per mile are relatively high. There are many areas that require excavation of more than a million tons of rock and earth per mile. Mountains are literally being flattened and valleys completely filled.

Deepest cut on the project is at Rush Creek (Mile 7) where the roadway lies 254 feet below the top of the cut. Biggest fill is on Contract 25 near Mossy where 980,000 yards of material is being dumped to bridge a three mile gap between ridges.

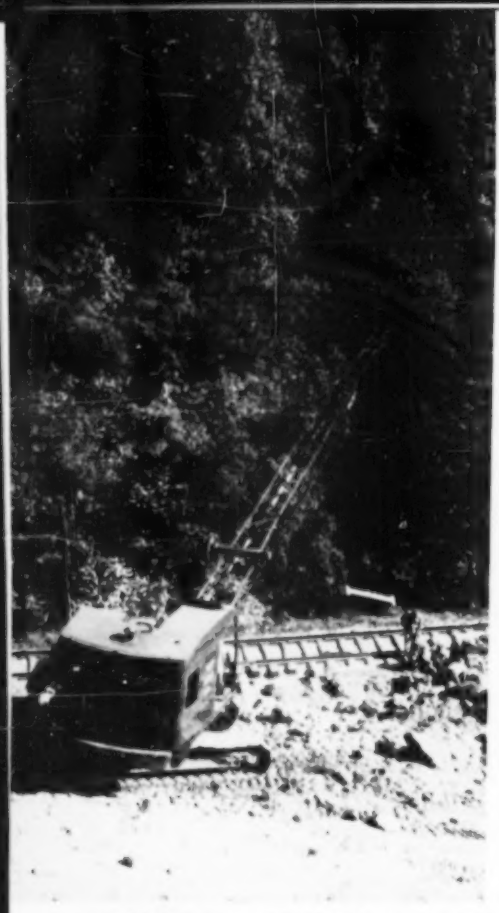
One of the largest grading and drainage contracts—and certainly one of the

Grading contractors hurl a mechanized construction army against the rock and hills of West Virginia in fashioning the roadway for an 88-mile north-south two-lane expressway. Excavation will total approximately 28 million yards.

toughest—is Contract 25, awarded to S. J. Groves & Sons Co., Minneapolis, Minn. The contract calls for grading, drainage, and substructure construction along the route of the turnpike from Mossy to Mahan (Mile 51.6 to 57.9) in Fayette county. Amount of contract as of August 19, 1953, was $5,872,662. Major grading quantities and bid prices were as follows:

157	acres clearing and grubbing	$700.00 per acre
2,852,000	cubic yards unclassified roadway excavation including placing and compacting embankment	1.40 per cu. yd.
109,400	cubic yards channel excavation	1.40 per cu.yd.
9,870	cubic yards open foundation excavation—earth	5.00 per cu. yd.
3,890	cubic yards open foundation excavation—rock	15.00 per cu. yd.
3,260	cubic-yards subsurface structure excavation—earth	3.00 per cu. yd.
1,940	cubic yards subsurface structure excavation—rock	12.00 per cu.yd.

Typical of the many rough excavation problems is this bench being cut by a Bucyrus-Erie 54-B 2½ cu. yd. shovel working high on the side of sandstone ridge.



B-E 22-B crane with 45-ft. boom handles stringers and headers for high retaining wall on embankment adjacent to track.

Work was begun on the contract May 15, 1953. Completion time fixed by the contract is early April 1954. The work schedule calls for 320 calendar days with a penalty of $400 per day.

Status reported by S. J. Groves & Sons shows excavation about 65% complete with an average of 15,000 cubic yards per day being moved. Grading is running 25% ahead of schedule.

More than 500 men, including temporary help, are employed on the project. The contractor is running two regular 10-hour shifts, 5 AM—3:30 PM; and 4 PM—2:30 AM for shovel crews, etc., and a special 7 AM—5:30 PM shift for operators of scrapers and drills.

One Contractor's Spread

To move the vast quantities of material, which in some places runs as high as 90% rock, S. J. Groves uses this big spread of equipment:

1—Northwest Model 6 dragline—1½ cu. yd.
1—Northwest 80-D shovel—2½ cu. yd.
2—Bucyrus-Erie 88-B shovels—4 cu. yd.
4—Bucyrus-Erie 54-B shovels—2½ cu. yd.
1—Bucyrus-Erie 22-B crane
1—Bucyrus-Erie 22-B dragshovel—¾ cu. yd.
1—Bucyrus-Erie 22-B dragline—¾ cu. yd.
1—Lima 34T truck crane
35—Euclid end dump trucks—15 & 22 cu. yd.
4—LeTourneau W scrapers—23 cu. yd.
6—LeTourneau LP scrapers—15 cu. yd.
2—Galion smooth wheel rollers—10 ton
1—Bros Road roller—50 ton
5—LeTourneau double drum sheepsfoot rollers
3—Caterpillar #12 motor graders
16—Caterpillar crawlers with bulldozers
14—Caterpillar crawlers
32—Gardner-Denver wagon drills
5—Ingersoll-Rand wagon drills
12—Ingersoll-Rand Air Compressors 600 cfm
12—Willys 4-wheel drive jeeps and pickups
6—Lima 1201 cranes—100 ft. boom
1—Lima shovel—¾ cu. yd.
1—Blaw-Knox Cement Plant
2—400 BBL cement bins
1—300 ton aggregate bin
5—Challenger cement trucks

The 2½ and 4 yd. shovels have drawn the tough rock excavation assignments in the deep cuts that place this 6.3-mile stretch among the most difficult of the entire project. The rock—a hard, blocky sandstone lying close to the surface in most areas and outcropping in some—accounts for a high percentage of the total of about three million yards of excavation on this contract.

Working at times from precarious-looking perches on high benches notched into the cut slopes and at other times all but surrounded by mountainous piles of blasted rock, the shovels have played a key role in keeping work on the contract moving at a highballing rate. A fleet of some 35 Euclid 15 and 22 cubic yard end dump trucks has

After top of cut near Beckley interchange was taken out by scrapers Northwest 80-D 2½-yd. shovels complete job.

handled hauling duties for the shovels, dumping the rock, for the most part, in fill areas of the initial two-lane roadway and wasting excess material in locations adjacent to the present roadway to become the fill foundation for a future dual strip.

Extensive Blasting

Some 30 wagon drills (see equipment list, page 24) have been making the advance assaults on the rock cuts, putting down the holes for the big blasts needed to prepare the rock in sufficient volume for steady excavating progress. Holes were 2¼-in. starting diameter drilled to a depth of 18 feet and loaded with Atlas, Du Pont, Hercules, or American 40% explosives. When rock work was at its height in the early fall, 12 to 15 thousand pounds of powder were detonated daily, preparing 16 to 20 thousand yards of rock. Biggest single shots involved 700 to 800 pounds of powder, with shooting handled in the early evening following the last regular shift.

Extensive maintenance shops for equipment have been built by S. J. Groves & Sons Co. at Mossy. All machines are serviced exclusively with Pure Oil greases, oils, and fuel. Two completely equipped trucks with Lincoln lubricators handle lubrication out on the job between shifts.

Portable Blaw-Knox batching plant provides concrete for substructures on contract 25, one of the largest — and the toughest — grading and drainage contracts.

Project manager for S. J. Groves & Sons is Sam T. Day. Superintendent is E. D. Sargent. Pete Sprenger is project engineer and O. E. Miller is office manager. Guy W. Hayden is resident engineer for Gannett, Fleming, Corddry & Carpenter, engineers for section two in which contract 25 is located.

Although cutting the turnpike route through this rugged mountainous terrain means high per mile costs, authorities claim the expense is justified by the result: An expressway that will provide a first class north-south highway transversing most of the state. At present there are no modern highways crossing West Virginia in a generally north and south direction. While large amounts of time and money have been

Lorain 820 dragline with 2-yd. Esco bucket and Lorain 2-yd. 620 shovel excavate shoreline of Kanawha river at Marmet.

Completed piers will support 1,200-ft. 3-span continuous deck arch type bridge across Bluestone River gorge at southern end of the turnpike near Princeton.

A Bucyrus-Erie 54-B loads rock to Eucs on part of tough 200,000 cu. yd. cut, mostly rock, at northern end of contract 25 held by S. J. Groves & Sons Co.

Major Equipment at Work on West Virginia Turnpike Grading and Drainage Contracts 8/27/53

Tractors	29
Bulldozers	170
Shovels, backhoes, draglines	88
Cranes, clamshells	21
Motor graders	37
Tractor-scraper units	90
Compressors	102
Drills & Jackhammers	112
Hauling units	150
Other trucks (combined)	150
Rippers	8
Rollers (incl. sheepsfoot)	65

invested in improving the existing roads, experience has shown that normal highway funds, raised through taxation, would never pay for a thruway satisfactory for heavy truck traffic.

W. Va. Needs Road

The need for better transportation into and through the state has become even more acute due to the great increase in commercial and pleasure traffic during postwar years. Construction of a self-financing toll road, therefore, has appeared as the only practical solution to the problem.

The toll road will correct faults of the state's outmoded north-south system that cause a large proportion of through traffic to avoid the long, difficult winding journey through the Mountain State. Hazardous road conditions that slow up drivers and make it easy for accidents to occur will be completely eliminated — long steep grades; curves of short radius; narrow roadways; short sight distances; and sections that flood during times of high water or become impassable during winter because of ice and snow.

Encouraging people to go through the state instead of around it, West Virginia's new artery will help link the industrial Great Lakes region with the Carolinas and other southern areas rich with raw materials. Expansion of local industries, especially the Kanawha River Valley's sprawling chemical plants, is also expected.

Legislation creating a Turnpike Commission and authorizing issue of turnpike revenue bonds was enacted by the West Virginia legislature in March 1947. Current Commission members are D. H. Morton, Charleston, chairman; William G. Stathers, Clarksburg, vice chairman; E. J. Flaccus, Wheeling; Hugh F. Hutchinson, Lewisburg, and H. K. Griffith, Charleston. Ray

Cavendish, Charleston, former West Virginia state road commissioner, is executive director of the turnpike and Allen C. Kinnaman, Charleston, is secretary-treasurer.

Preliminary traffic surveys were made by Coverdale and Colpitts, New York consulting engineers firm, and engineering studies by Howard, Needles, Tammen, & Bergendoff, New York and Kansas City. Final plans approved by the Turnpike Commission called for a high type two lane expressway with provisions for dualization in later years when traffic warrants double lanes in both directions. All crossings over railroads, highways, streets or other facilities are to be separated. Horizontal curves will be easy and sight distances ample. The design allows a safe speed of 60 mph. Total cost will be in excess of 100 million dollars when the project is completed in 1955.

Due to the broken terrain, many expensive bridges are required for the crossing of streams and gorges. For slightly more than each mile of its length, the turnpike requires construction of a bridge structure. The two largest of these structures are the bridge at Bluestone River Gorge near the southern end of the turnpike and Four Mile Fork bridge near the northern end. Both of these are 3-span continuous deck arch truss type bridges, and each is 1,200 feet long. Bluestone bridge will be 278 feet above the river bed at its highest point; the Four Mile Fork structure will have a drop of 255 feet to the creek bed. A major bridge spanning the Kanawha river at Charleston is under construction and will cost several million dollars.

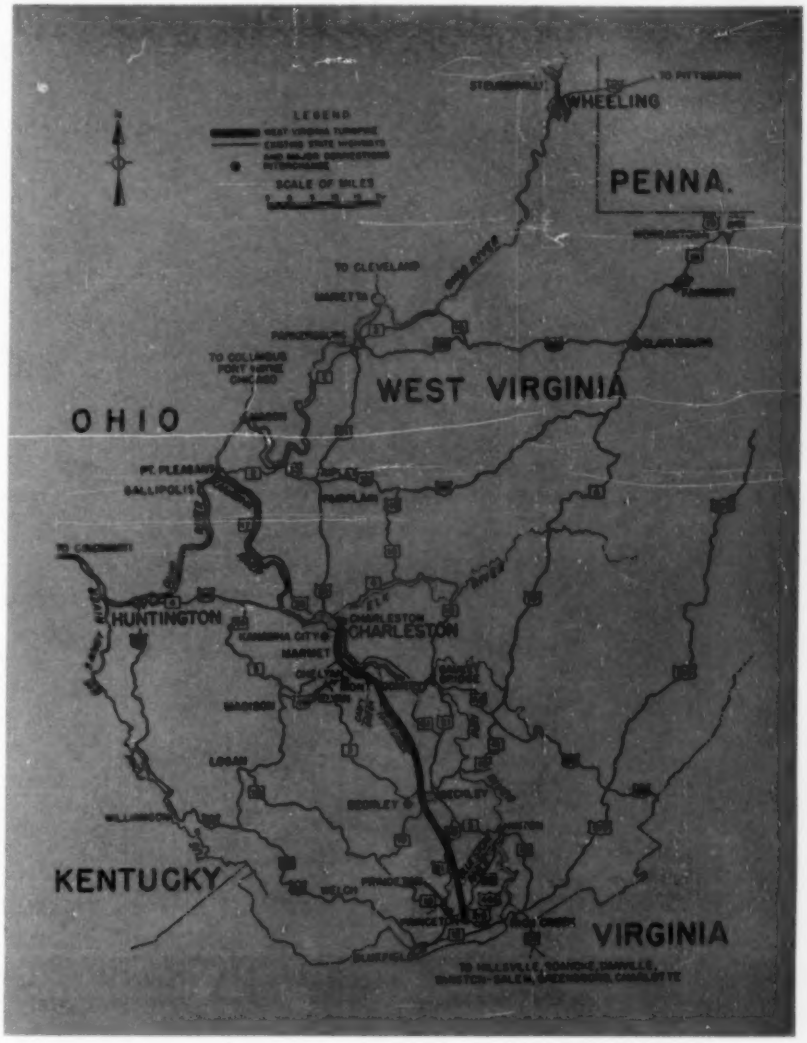
Approximately 18,000 cubic yards of concrete will be required for the larger structures. Seventy-five other structures consisting of overpasses, underpasses, and stream crossings will be built with 70,000 yards of concrete.

Tunnel Through Ridge

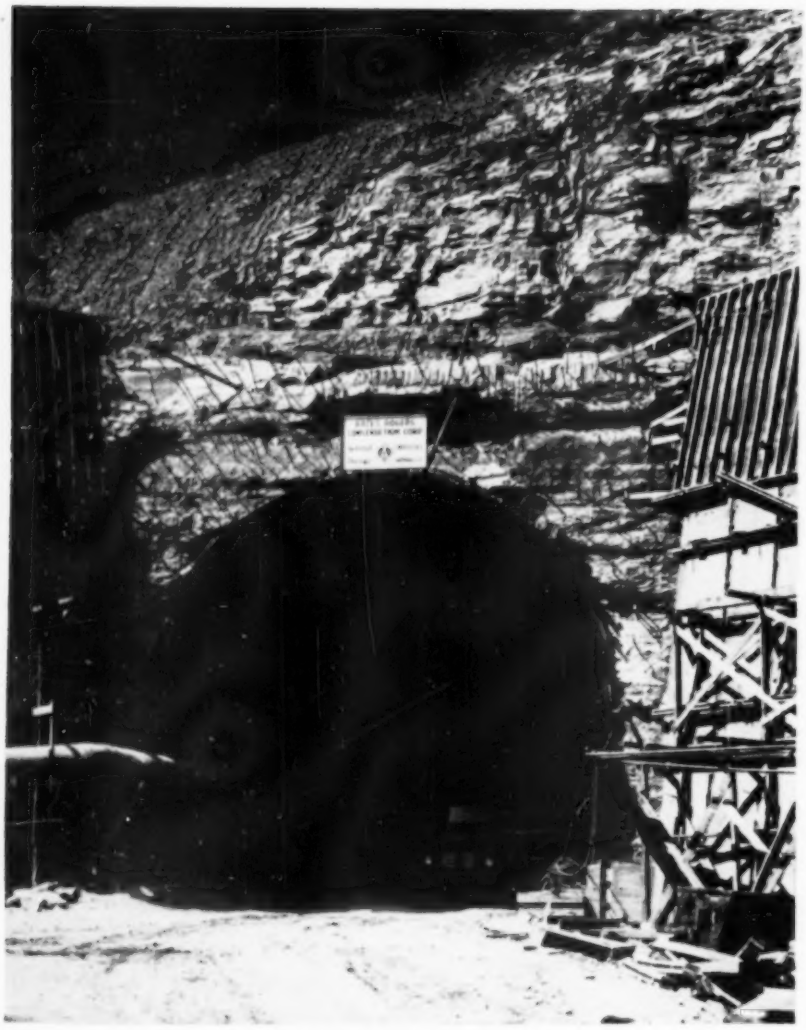
One of the most interesting features of the entire expressway is a vehicular tunnel, 2,664 feet long, which will penetrate a sandstone ridge at Cabin Creek, 19 miles south of Charleston. The ventilated tunnel will have a flat ceiling, 14 feet high, and a 24-foot roadway. The inside surface will be faced with white tile and have neon fluorescent lighting.

About 93,000 yards of rock, coal, and shale must be bored out of the ridge. The hole will then be lined with 30,000 yards of concrete. A jumbo con-

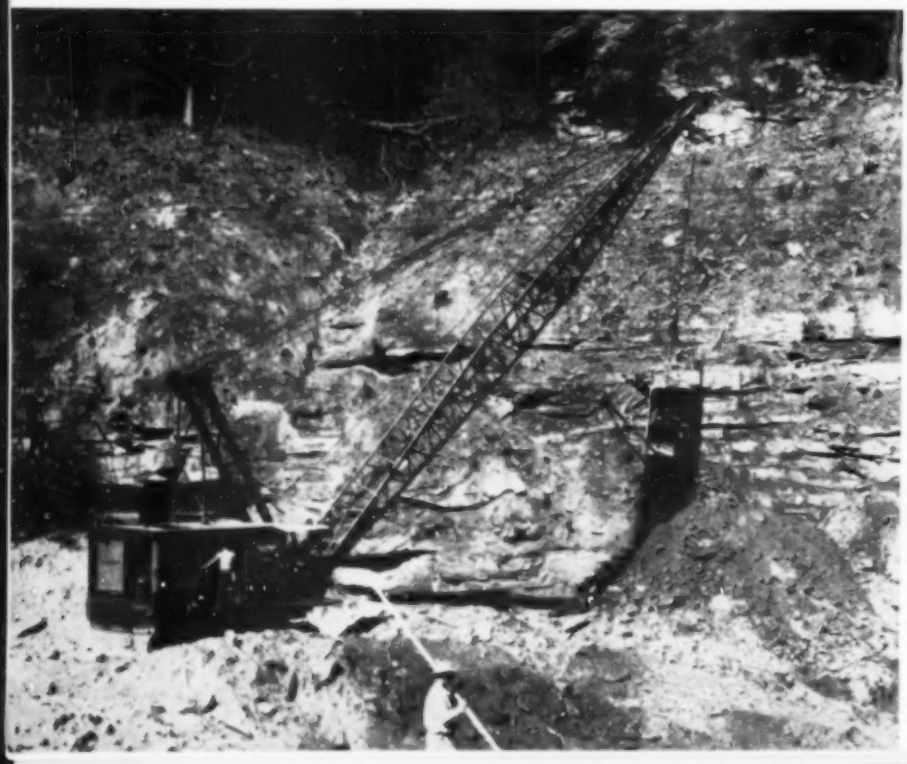
Mapped here is 88-mile north-south 2-lane expressway nearing completion in West Virginia. Turnpike joins Charleston-Princeton and includes 5 interchanges.



Progress is faster in plateau country at southern end of throughway where Lima 604 shovel loads rock and earth to a LeTourneau on cut near Bluestone bridge.



Above: $5 million 2664-ft. vehicular tunnel is under construction at Cabin Creek. Below: B-E 54-B dragline with 2-yd. Esco bucket digs new stream bed.



sisting of 13 Ingersoll-Rand DA-35 drifter drills is putting through the hole. Operating in the narrow quarters is an 802 Lima stub boom shovel, which loads the material to five Tournarockers. A Hough Payloader is used as a handyman loader. Cost of the boring is estimated at $3,200,000 and total cost of $4.5 million. Bates & Rogers Construction Corp., Chicago, is the contractor.

Plan Concrete Paving

Pavement for the entire turnpike will be a non-skid Portland cement concrete capable of supporting any reasonable wheel load the expressway is expected to carry. The design provides for adequate drainage and freedom from frost action. Surfacing will be concrete or concrete-bituminous, according to the low bid for each of the paving contracts. Most of the major contracts were advertised in mid-August and bids received in early fall. All paving contracts were let on October 7. Bids totalled $19,400,000.

Requirements for the two types of surface bids as alternates in the proposal are as follows:

Concrete alternate

Sub base: 3 million tons crushed stone

Surface: 1½ million sq. yds. of concrete

Shoulders: 56,700 tons macadam base aggregates
12,500 tons seal aggregate (crushed stone chips)
1,400,000 gallons emulsified asphalt
240,000 gallons prime asphalt

Asphaltic-concrete alternate

Sub base: 3 million tons crushed stone

Macadam base: 683,000 tons macadam base aggregates

Wearing surface: 285,000 tons seal aggregates
8 million gallons emulsified asphalt
1,370,000 gallons prime asphalt

Shoulders: same as for concrete alternate

Normal pavement width will be 24 feet with nine foot stabilized shoulders on both sides. Maximum grade is 5% and the majority of these places are short; average grade runs 2%. A minimum 1,030-foot radius has been set for all horizontal curves.

In all cases where grades are long enough to slow down truck traffic to any great extent, creeper lanes 12 feet wide are being provided. These lanes extend approximately ¼ mile over the tip of the hill before merging back in. There are to be 22 miles of these lanes

which will free motorists of the annoyance of long, slow climbs.

Toll traffic will enter the turnpike at limited access points. Modern interchanges, conveniently located, will carry traffic on and off the route. The distances of these cloverleafs from the southern terminal will be:

US 219 & 460	0.0 miles
Princeton (W. Va. 20)	2.6 miles
Beckley (W. Va. 3)	36.0 miles
Cheylan (W. Va. 61 & US 60)	74.4 miles
Kanawha City (W. Va. 61 & US 119)	86.7 miles
Charleston (US 21, 35, 60)	87.6 miles

Keeping the turnpike on a straight course involves relocation of 35 miles of state and federal highways. Biggest single stretch of highway to be moved is three and one half miles long. Major route changes are being made on US 61 and US 19-21. About 10 miles of streams are also being diverted. These channel changes require moving 2 million yards of material. Largest of these projects is the diversion of Paint Creek.

General consultants for all phases of the project is the firm of Howard, Needles, Tammen & Bergendoff. E. K. Timby, managing partner of the firm, has overall charge of design coordination and construction supervision. C. H. Petersen is project engineer.

Section Engineers

To furnish construction plans and supervision, the following firms are employed as section engineers:

Section 1 (Princeton District) — Design: Capitol Engineering Corp., Dillsburg, Pa.
Supervision: Fay Spofford & Thorndike, Boston

Section 2 (Beckley District)—Design & Supervision: Fay Spofford & Thorndike

Continued on page 42

While 54-B loads blasted rock on route relocation project, Lima 170-D truck crane crushes stone utilized for fill; Cat D8 dozers are levelling the fill.

An 88-B shovel cuts through shoulder of sandstone ridge at beginning of 980,000 cu. yd. fill near Mossy. Blasted rock will be used as fill for roadbed.

LaPlant-Choate 18-yd. motor scraper working on site of Chelyan interchange dumps fill which is spread by the Cat D8 dozer.

Shoofly for the S P & S

by Ray Day

A Bucyrus-Erie 51-B shovel works west end of major rock cut, loading E-19 Tournarocker. A Cat crawler and scraper bring up load of sand to protect tires.

ON THE right bank of the Columbia River at Dallesport, Wash., approximately 100 miles upstream from Vancouver, a small but interesting piece of rock excavation is nearing a finish. It is one of many Corps of Engineers contracts which, sometime after 1960, will result in the completion of a new hydroelectric power dam at The Dalles. G. D. Dennis & Sons, contractors of Portland, Ore. have the $190,000 rock shooting job.

The contract calls for construction of about 5,000 feet of shoofly track, or temporary detour, for the Spokane, Portland and Seattle Railroad. The main line railroad formerly passed through the dam area.

Relocation of the SP&S will be taken care of in two construction stages. The Dennis contract represents the first phase of this work, and will accommodate trains, for the next year or so at least, through the construction area of The Dalles Dam. Later on, a major 15-mile railroad relocation is planned. It will route the SP&S permanently north of a 675-ft. navigation lock, which will also be built as a part of the dam.

The Columbia River plain at the Dallesport site is a tricky, hard-to-figure combination of basalt flows. Basalt is an igneous rock, evolving directly from the eruption of volcanoes nearby in ancient times. The material takes many forms. They range from cinderlike, porous formations down to dense, extremely hard, obsidian-like rock. The project called for the excavation of 140,000 cubic yards, at least 90% of which was hard basalt, requiring drilling and shooting.

Since most of this yardage was concentrated in a single large cut 2,000 feet long and 67 feet deep in one place, the Dennis organization soon found that it had an interesting and difficult assignment on its hands.

Standard Railroad Section Built

In line with Corps of Engineers plans and specifications, the Dennis job will provide a standard U. S. gauge railroad section throughout the shoofly area. The contract called for grading, ballast, placement of ties and rails, communications lines, and right-of-way fences. The two railroad main line ties, at each end of the shoofly, will be made by standard track crews of the SP&S after

Dennis finishes the tailend of his contract.

Because of the necessity for construction haste — to make the new facility available in as short a time as possible—work which began July 1, 1953 has moved along so rapidly that a final completion date is planned for November 15, 1953 at the latest.

The railroad grade on the new shoofly will consist of an 18-ft. wide subgrade, topped by six inches of granular material, which will support the ties. Some 3,000 cubic yards of 2-inch-minus crushed rock ballast will then be worked around the ties. Side slopes in cut sections call for ¼:1 ratios in rock. There are but few pockets of other material in the area, and these consist mostly of blow sand, which comes down off the lava flow escarpments to the north. In the blow-sand areas, side slopes were built 1½:1. All fill slopes called for the same 1½:1 ratio.

The shoofly roadbed is to be virtually flat, ranging from perfectly level grades to a maximum of .2 of 1%. The deepest fill in the job is 38 feet. It is near the west end of the project. The deepest cut is 67 feet. It is at the crest of a major rock ridge which stood in the way when the original line was built through this area. But when the original line was built, few cuts like this were undertaken.

Under the personal supervision of both company owner G. D. Dennis and his managing superintendent, D. L. Dennis, an efficient piece of organizing was worked out from the beginning. Both the senior and junior members of the contracting firm realized that their low bid had landed a job with considerably more than average problems, even compared to road-building.

For example, the terrain was so unfavorable in the area that most of the hauling and disposal of material would have to be done over the partly finished shoofly. That would make necessary the maintenance of haul roads through construction sections at all times. Since all of this projected area also had to accommodate drilling equipment, too, it was important to schedule drilling and loading operations sufficiently far ahead of power shovels, but yet not in such a way as to interfere with the movement of hauling equipment. This turned out to be an extremely difficult part of the planning phase, especially as cuts neared the bottom and became narrow.

The operational mode of attack, however, was straightforward. The job was first opened up in the center of the deepest cut. A fleet of wagon drills and compressors, with crews of drillers and powdermen, started work at this point first, making their first major slug of drill holes. The first shot covered the deep cut area from the summit easterly.

General Superintendent D. L. Dennis and General Foreman Bruce Gordon face camera confidently, because they've whipped some of the west's worst basalt rock.

Hard basalt complicates relocation of railroad through dam area, but modern explosives and excavating equipment solve problems in Washington.

After the shot was pulled, this area was then loaded out by shovels working one at each end of the blast. As they removed the material, the drilling crew moved over to the west half of the deep cut, and prepared a similar shot at that location. In this way, the drilling equipment remained out of the way of power shovels and hauling units. This same general scheme was then repeated alternately in further lifts, until the big chunk of rock excavation was worked down to grade.

In between, other convenient areas were worked by drilling equipment so as not to interfere with hauling units.

Included also in the job organization was an equipment service plan, which will be detailed later in this article. It called for fueling and lubrication service once a day, preferably on the swing shift. Basic planning also included labor provisions for scaling the slopes as the work progressed, in order to minimize raveling after the cuts were finished.

Basalt Makes Hard Drilling

Every key member of the Dennis organization knew almost from the start that the blocky, seamed basalt formation would be particularly difficut to drill and shoot. Many of the men had tussled with this type of rock before, in their work over the states of Washington and Oregon, and they recognized with some feeling akin to respect what a tricky drilling assignment this rock can pose. It is not unusual, for example, to twist bit shoulders off in one hole, lose excessive gauge in another, find still another almost impossible to drill on account of hardness, and then to hit open porous material which takes much more than normal air to remove drill cuttings.

They were not disappointed. The rock formation was shot through at regular intervals with interbeds, in which the nature of the material changed rapidly. In one spot, between

two densely bedded layers of basalt flow, a pocket of loose talus material was found. Any good powderman knows right off that a TNT charge set off near talus is likely to bootleg, as its force escapes through the nearby voids between rock particles. Later on, this characteristic was to cause surprising phenomena. One heavy shot, exploded near such a formation, caused puffs of dust and smoke to appear along the Columbia River bank near the dam, several hundred feet away.

In selecting the drilling equipment for this assignment, the Dennis management settled on wagon drills. Five of these machines were brought in. Three were Gardner-Denver, and two were Worthington Blue Brutes. Because of the necessity for mobility on all drilling, the compressor equipment, too, was portable. There was a 600-cfm Chicago Pneumatic vane-type machine, a Gardner-Denver 500-cfm, and a pair of Gardner-Denver 365's.

Timken drill steel, in increments of 6 feet, was brought in. This steel had a maximum length of 24 feet. Timken tungsten carbide rock bits were also selected for the tough drilling job. All rock bits brought in were 2½-in. diameter when new, and every effort was made to bottom even the 24-ft. holes at 2¼-in. diameter.

No Chances Taken

Fortunately, because the first shot was tremendously important, there was no long drawn out period of trial and error, working out a procedure for drilling and shooting the basalt. No chances were taken, even at the start. The hole pattern was set up on the basis of a 7-ft. square grid, and 24-ft. maximum depth holes — or shallower where final grade lines could be established with shorter steel — were sunk vertically. These drill holes were carried down to a point one foot below grade line, except on side slopes, where they were terminated at the theoretical slope point.

According to General Superintendent D. L. Dennis of the shoofly project, drilling performance was good. Each of the wagon drills averaged 350 feet of hole per day, despite the fact that the heavier parts of the dense basalt often slowed drill progress to a crawl. This dense, hard-to-drill material had a way of holding wagon drills on a 24-ft. hole for half a shift, but just as often, the next hole seven feet over went down in half an hour, or even less. Average drill bit life in the formation ranged from 600 to 1000 feet, during which time the tungsten carbide inserts were sharpened several times by grinding. All bit grinding was done at another construction shop in the vicinity, maintained by Guy F. Atkinson Co. and Ostrander Construction Co., contractors on the spillway for the dam. The bit sharpening shop was equipped with a Mine & Smelter grinding machine, gauges, calipers, and other such tools of the bit sharpeners trade.

The newly reground bits were returned to the Dennis spread, and used until their gauge wore down to the 2¼-in. diameter dimension set as a minimum for the bottom size.

The drilling spread worked from 200 to 600 feet ahead of power shovels and hauling equipment, drilling in such a way that optimum breakage at the least cost would be assured.

An interesting pattern of controlled loading and blasting was employed, and it resulted in excellent breakage of the blocky basalt very close to predetermined lines. Generally speaking, the center two or possibly three rows of holes were barrel-loaded, without springing, with powder, and fitted with instantaneous electric exploders. One of these exploders was placed with three to four sticks of Atlas 40% special gelatin powder in the bottom of each hole. If no ground water was present, and there seldom was, the balance of the hole was then column loaded with Atlas Flo-Dyn No. 4 granular powder to within five feet of the surface. Exactly the same type loading governed the remaining rows of holes toward the slopes on both sides, but on these rows, delays were employed.

The planned idea of the delays was to pull the center three rows with an instantaneous cut shot, and to break the formation out of each side subsequently with similar delays on both sides of the center line. Atlas Rockmaster No. 1, 2, and 3 delay exploders

Caterpillar D8 tractor-dozer cleans up pit floor around Bucyrus-Erie 38-B shovel.

Worthington wagon drill sinks holes in rock formation. Caterpillar D2 tractor-towed Gardner-Denver compressor in background helps supply air to the project.

were therefore run from the edge of the instantaneous shot, causing this rock to explode a few milliseconds later, and pile against the first. The result was invariably a neat, well broken, well piled rock bank, lying in the center of the cut. It was easy to load with power shovels in that final fashion, and the delays along the slopes also tended to minimize excessive breakage and raveling.

The powder crews turned in an expert final performance. Many of the shots were pulled successfully with as little as ½ pound of powder per cubic yard. The figure was always between ½ and ¾ pound per cubic yard, and a general average was .6 lb. One shot, consisting of 1000 holes 24 feet deep, was loaded with 13½ tons of powder. It was fired by a 1200-hole battery. The big shot gave excellent results so far as breakage and piling were concerned.

Blasted Rock Hauled Away

The disposal of blasted, broken rock was strictly a job for high capacity power shovels, and mobile, high production rock hauling units. Many of the work areas, particularly near the bottom of the cuts, were characterized by lack of space, so for that reason, compact units were indicated. To handle rock loading on the west end, the Dennis management selected a Bucyrus-Erie 51-B shovel, equipped with a 2-yd. Bucyrus-Erie dipper and Esco teeth. Hauling units under this rig were three Westinghouse-LeTourneau D Roadsters with E9 Tournarockers. The average haul on this section of the project was 1,000 feet, and the 51-B with its hauling units was set up on the production basis of 1200 cubic yards per 8-hour shift. The Tournarockers were figured for 6 cubic yards of pay production a trip. The 51-B was assigned to double shift operation.

On the east end, a Bucyrus-Erie 38-B Shovel with a Bucyrus-Erie 1½-cubic yard dipper was spotted into the bank. Its hauling fleet consisted of a single Westinghouse - LeTourneau D Roadster and E-9 Tournarocker, and two Koehring Dumptors. The average haul on this end was only 750 feet, and production was based on 750 cubic yards per 8-hour shift.

One of the difficult conditions of both shovel loading spreads was the necessity for digging head-on into the bank, and swinging almost 180 degrees to dump the material into the hauling units. But there was no other way to conduct the operation, however, because cramped quarters at the bottom of the railroad cut made any system of double spotting impossible.

Because the work area will all receive a major working over as various construction phases of the dam become active, the Corps of Engineers made no attempt to balance excavation quantities between cut and fill. Three waste dump areas were designated in the vicinity for the disposal of material,

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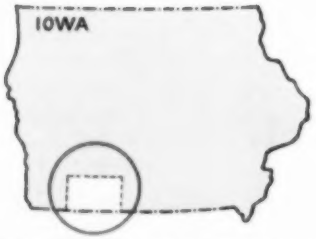
Operator swings shovel dipper over bed of Koehring Dumptor and releases load.

Taking Iowa



RINGGOLD COUNTY has 935 miles of county roads. This is the location of farm to market road construction done by the International Crawler fleet of Easter & Schroeder, Inc.

"IDEAL FOR FARM-TO-MARKET ROAD CONSTRUCTION," say Joe Easter and Don Schroeder (above). "In our eight month's working season, our five TD-18A units, with the sixth as a pusher, moved approximately 540,000 cubic yards, with minimum downtime."

Pick Your Site and Set Your Hour...
We'll Demonstrate Our Tractor's Power

ROAD BUILDING PRODUCTION LINE! Part of the Easter & Schroeder fleet of International crawlers on a regrading job in Ringgold County, Iowa. On this seven-mile stretch they moved 78,000 cubic yards in three weeks' time. *"We move it that way all the time,"* say the owners.

to Town

Farm-to-market roads get big boost fast from the International Crawler fleet of Easter & Schroeder, Inc.

The dirt flies when Easter & Schroeder, Inc., move in with their fast, powerful fleet of International crawlers . . . and Iowans can get to town and back in time to do the milking. For these Griswold, Iowa, contractors specialize in farm-to-market roads in the tall corn state.

Take the seven-mile job in Ringgold County, Iowa, you see here. In three weeks' time, Easter and Schroeder moved 78,000 cubic yards of dirt to give the road a 24-foot top on a 66-foot right of way.

Easter and Schroeder came to this Ringgold County job from one in Taylor County, where they moved 35,000 cubic yards of dirt on a two-mile stretch, completing the job in six 11-hour days.

"After 25-years' experience working in dirt, we settled on a crawler fleet one hundred per cent International," say these contractor partners. The fleet now consists of six International TD-18As with scrapers and 'dozers and a TD-14A with tamping roller.

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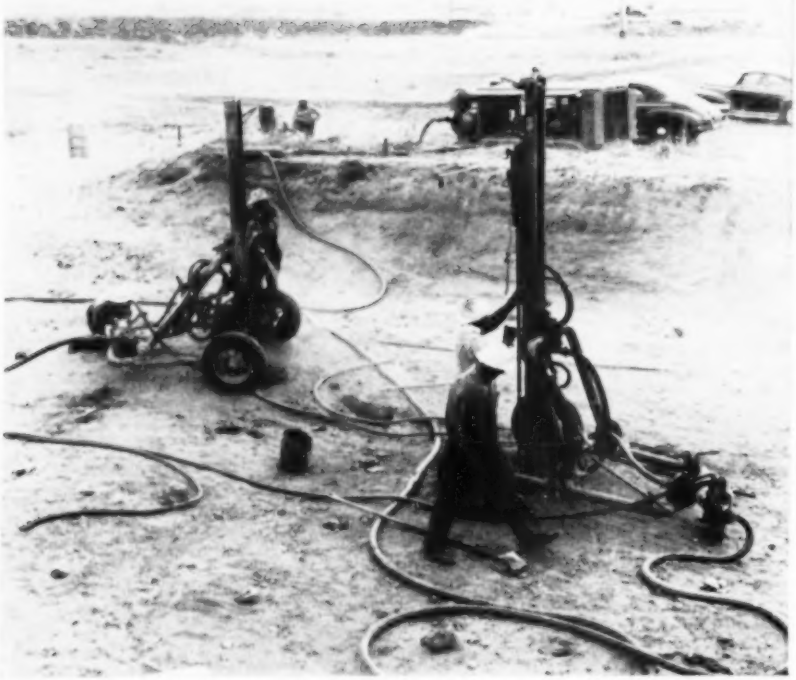


Both Gardner-Denver and Worthington wagon drills work on rocky point with air that's been supplied by Chicago Pneumatic 600-cfm compressor behind knoll.

Shoofly . . .

Continued from page 31

and in addition, some of the material was designated for necessary fills in the shoofly. The blasted material was either hauled directly for placement in 3-ft. lifts in these fills, by end dump methods, or was disposed of by wasting the material in the spoil areas.

Under a rental arrangement by the hour with Wesley Dixon of Battle Ground, Wash., the Dennis firm also made plans simultaneously while excavation was in progress to produce the 3000-cubic-yard stockpile of 2-inch minus ballast material. Broken rock from the Bucyrus-Erie shovels was hauled occasionally as required to the feeder trap of a war surplus Cedarapids portable crushing plant. This plant then turned out the ballast, stocked it into piles, and left things in shape so that the track and ballast could be laid rapidly.

A conspicuous program of good equipment maintenance and preventive repair was apparent throughout the life of the contract. It was the kind of preventive maintenance program which larger contractors often practice, but which smaller ones sometimes feel they cannot afford. According to D. L. Dennis, however, "We couldn't afford to be without it."

The equipment repair program was complicated by several factors peculiar to this particular job. For example, all through the hot, dry summer of 1953, high winds and blowing dust or dirt were such a problem that fuel and oil filters had to be changed once a shift. The sharp, broken particles of basalt rock was such a tire hazard that the company found it distinctly to its advantage to bring in a Caterpillar D8 and Caterpillar 80 scraper, which maintained a 3-in. sand cushion over the rock haul areas. This sand cushion did not interfere with wagon drilling.

In addition to specialized maintenance items, the organization maintains equipment strictly on the basis of manufacturer's service manuals. A complete Lincoln Lubrovan mobile grease unit was assigned full time to the job, complete with fuel tank, and pressure equipment for dispensing lubricants. In the harsh, dusty terrain, battered by hot winds, the dependable lubrication of all fittings, particularly those on track rollers, was vital. A dependable grease man was employed on a 4 p.m. to midnight basis. This operation reached every unit of machinery assigned to the project, once each day.

Lubricants were standardized as much as possible. Union Oil Company's T5X lubricating oil was used in all engines, Diesel and gasoline alike. All greases were also furnished by Union Oil.

Was Shovel Runner

This business of careful maintenance comes naturally to the Dennis organization, and has been the lifelong policy of G. D. Dennis for as long as he can remember. Dennis was at one time a shovel runner, and later a service man for the Bucyrus-Erie Company, prior to 1930. In 1930 he started his own contracting business with the then popular Model 1030 Bucyrus-Erie shovel. His business prospered over the years, and toward the late 1930's he was landing regular dike and rip-rap contracts along the rivers of central, western, and northern Oregon. In 1939, he purchased his first Bucyrus-Erie 22-B, and the firm now owns its fourth such model. In fact, this rig will do some of the final slope work on the shoofly project, and is assigned to the job as an odd rig doing occasional lifting or dragline digging.

Through all of these intervening years, Dennis continued his well-

Tournarocker hauled rock to trap of this war-surplus Cedarapids portable crushing plant which produced 3,000 tons of 2-in. minus ballast for the railroad line.

learned policy of maintaining all his equipment in top operating condition. The firm now includes new blood, which entered the organization shortly after World War II. Three of Dennis' sons are now helping with the work. In addition to Dallas Dennis, who managed the shoofly job, the firm also includes William Dale Dennis, and another brother, Donald.

The firm is beginning to pick off some sizable jobs. It is now finishing a 4-mile highway relocation around Lookout Point Dam, near Lowell, Ore., and has recently landed an $800,000 Bureau of Public Roads forest-road contract for 14 miles of access highway in the Smith River country, near Reedsport, Ore. Revetments have been finished recently at Corvallis, on the Willamette, and at Junction City, on the Long Tom River. The firm had a part of the grading at the aluminum plant at Wenatchee, Wash.

Completion of the SP&S shoofly project will mark the end of another successful battle against the difficulties of Mother Nature. The speed of the construction program for the main dam at The Dalles will be assisted by what the Dennis crews have done.

Big rock cut was necessary to make room for the SP&S shoofly. This Corps of Engineers' project will speed construction program for the main dam at The Dalles.

Personnel

Field operations for the Dennis firm were under the supervision of D. L. Dennis, assisted by Bruce Gordon, General Foreman, and Cecil Waits, Drilling and Powder Foreman.

The work at Dallesport, so far as the Corps of Engineers is concerned, is under the general supervision of District Engineer Colonel Thomas H. Lipscomb, head of the Portland office of that organization. B. L. Peterson is Chief of the Engineering Division. T. W. Ragsdale is Chief of Operations, J. L. Kemple is Chief of the Construction Division, and H. B. Elder was Resident Engineer. Elder was assisted by Joseph Huey, Chief Administrative Assistant, and Leonard Estey, Assistant Resident Engineer.

Rentals Keep Clematis Brook Busy

They have only four machines to farm out, but there is a waiting list for them. Top-notch machine condition and tested operators sell the firm's rentals in Boston area.

THE equipment rental business is excellent according to Wesley E. Duncanson, operator of a Watertown, Mass., firm whose business is 95% rentals. Duncanson is president, assistant treasurer, manager and sales manager of Clematis Brook Sand & Gravel Co., the misleading name under which the shovels-for-hire enterprise thrives. Although the corporation has only four machines to lend, bookings generally run a month or more into the future. At least one contractor who has been hiring Clematis Brook shovels over the years found the arrangement so satisfactory that he sold his own.

White-thatched but energetic after a lifetime spent in the excavating business, Duncanson explains the reasons why it sometimes pays to rent equipment:

"Often when a contractor owns his own shovel, he has to lay the operator off in the winter and chances are he won't get the same man back in the spring when he starts excavating again. He doesn't have the steady, experienced operator who takes a personal pride in his machine. Maintenance and replacement costs may become very high because the machine does not get proper care.

"I keep my men all year round. Each machine stays in top shape to give top output. And each operator has many years of experience on the machine so that he can run it at maximum efficiency.

"Thus when someone rents these machines, he gets high production at a fair price and he has no maintenance problem.

"He also has no problem keeping the machine and man busy when he's through with it. That's up to me."

Although the Clematis Brook stable of equipment is very active, it is not large. Belonging to the firm are three Bucyrus-Erie excavators: a 10-B, a 15-B, and a 22-B. An International TD-9 crawler is equipped with Bucyrus-Erie blade for tractor rental. A 10-ton Dodge truck with Gar Wood bed handles haulage assignments when necessary. To make the frequent equipment moves, the truck pulls a Rayburger tip trailer. It can transport the tractor, the $\frac{3}{8}$-yd. 10-B or the $\frac{1}{2}$-yd. 15-B shovel. Duncanson hires an outside trailer when the $\frac{3}{4}$-yd. 22-B must be moved. Two welders, one a stationary transformer electric and the other a portable gasoline model, round out the list of equipment.

In addition to these machines, Duncanson stocks a fine selection of front-end equipment so that his shovels will never be at a loss when facing the special jobs. For the 22-B, Clematis Brook keeps on hand a shovel front end, a dragshovel front end, a crane front end up to 60 feet in length, a $\frac{3}{4}$-yd. Red Arch dragline bucket and a $\frac{3}{4}$-yd. Williams clamshell bucket. The 10-B and 15-B are supplied with shovel and dragshovel front ends. A set of skullcrackers serves the crew when concrete breaking is part of the job.

Company Stocks Buckets

Despite the variety of front end equipment, Duncanson estimates that 90% of the work is done with a dragshovel boom. The company stocks buckets in widths from 18 inches to 42 inches which let them handle most standard-sized trenches. They find the narrow buckets especially handy in trenching under sloppy conditions because workmen can slip in sheeting right after the bucket in one pass. Wider buckets sometimes need several passes to clear a trench and by then the sides have started to fall in.

The Clematis Brook excavators get to work on a great many kinds of jobs each year. When *Excavating Engineer* visited the company last October, we rode around with Duncanson to visit the three excavators — all of which were caught in the act of working. It must be pretty difficult to catch them any other way when you consider their production records.

At the corner of highways 128 and 9 (the Worcester Turnpike) in Needham, the Massachusetts Department of Public Works is building a big new maintenance and traffic depot. Here the 10-B was hard at work digging fill

Clematis Brook's $\frac{3}{8}$-yd. 10-B dragshovel loads fill at site of Mass. DPW garage construction. Though 15 years old, Hercules-powered machine looks like new.

material for J. Sullivan Sons, a well-known Cambridge contractor who holds the grading sub-contract on the garage construction.

Although the 10-B is 15 years old, it was as clean as a new machine and its JXA Hercules gas engine purred like a new automobile. Operator Ernest Raymond, who has been with the company 12 years, kept the 5-6-yd. Ford and Chevy dumps rolling out from under his bucket. Each excavator is fitted with a horn which lets the truck driver know when he's loaded. Long acquaintanceship with the machine enables him to keep the bucket moving in uninterrupted, smooth motion, cycle after cycle. In dumping, the operators kick the bucket out away from the dirt, a motion which makes it unnecessary to raise the bucket so high that cycle time increases.

Duncanson says he has kept the 10-B working 10 months out of every year ever since the company bought it. The men have dubbed the little excavator "the goat." They hung the nickname on it to show their respect for its agility in the Massachusetts terrain. It hustles up over hills and around them. Clematis Brook has found it especially valuable on oil and gas lines and in swamps.

One of the few complaints Duncanson ever received about his operators, came from a truck driver. He protested that the operator kept right on loading even while lighting a cigarette. He went further to claim that the Clematis Brook operators were abnormal since they didn't seem to have to take time out to visit the men's room. The truck driver was a bit frayed after serving the hard-working shovel all day.

Duncanson relates this comment only to illustrate his theory that the operator who has a steady year-round job with the same machine becomes a top-notch producer. He himself exerts no influence to keep the men working at high speed.

Loaned to a land developer, ½-yd. dragshovel cuts sewer trench in Lexington.

Next, we drove over to Lexington where R. H. Stevens, a local utility contractor, had the ½-yd. 15-B working for him. Stevens develops land on contract by installing sewers, streets, water lines, and drains. He had rented the machine all through the summer.

When we stopped in, the 15-B was sinking sewer trench and laying 18-in. pipe with a ½-yd. dragshovel front end. Stevens was developing an open field near highway 128 and he had to

Left to right are Ernest Redding, master mechanic, Frank Kennedy, oiler, and W. E. Duncanson, company president.

Firm's Dodge dump spills Gar Wood bed full of coarse stone on drain laying job. Later, GMC-powered 22-B spread stone.

have the utilities and road accepted by cold weather time. Eddie Redding, a Clematis Brook employee for 18 years, was making the dirt fly. Duncanson conservatively figures production on the International Diesel-powered machine at 400 yards a day, though it will do better in pit work.

One of the devices which makes each operator an expert on his excavator and which helps keep the machines in like-new condition is the operator's day book. The men log in each day such items as fuel oil used, cable breakage, when oil is changed, when filters are changed and a couple of dozen other facts which give a complete service picture. When something out of the ordinary causes a malfunction, a distributor service man is summoned. After the repair, a complete description of the symptoms and the remedy is recorded in the day book. Next time the machine balks for the same reason, Clematis Brook men will repair it.

Never Lost a Day

On-the-job repairs, however, are a rarity. Duncanson says, "We've never lost a full day in my memory on a breakdown."

Finally we visited the firm's GMC-powered ¾-yd. 22-B which was on loan to Eugene Tougas who was constructing a subdivision on the outskirts of Watertown. With dragshovel front end, the machine was installing a drainage system. It dug a four foot deep trench and spread a base of two-inch stone along the bottom. The Clematis Brook Dodge dump hauled the stone into the job. Another contractor's Oliver Cletrac crawler helped spread and grade at the job site.

Ernest Redding, who operates the 22-B, has been with the firm 27 years. He also serves as master mechanic for all machines. When the construction season is over (they count on 10 months), the machines are brought into the company garage on Pleasant Street in Watertown. Here in a 40-ft. wide, 60-ft. long, 20-ft. high building, one at a time they are given a thorough overhaul during the two coldest months. The shop is well-equipped and includes a pit and overhead crane.

Duncanson keeps most of the crew working year 'round by putting them on overhaul in the winter. Three men have been taught to weld and they have become pretty handy.

Master Mechanic Redding excels as a handyman. An example of his ingenuity may be seen in the pre-heater he built for the 22-B. When Duncanson revamped the heating system of a house he owned, there was a Rudd stack heater left over. Redding salvaged the heater before Duncanson got around to throwing it away. He installed it in the 22-B, rigged it up to feed on bottled gas. Then he routed the engine coolant through the Rudd's coil. The inlet side was connected to the radiator and the outlet to the block. In cold weather, Redding ignites the heater 15 minutes before he's ready to start. When he's ready, the engine is good and warm and it kicks off usually on the first try.

One winter, just after he finished putting in the heater, Redding had the 22-B working extra late in the year on a job at Logan International Airport. The temperature had dropped to zero in the morning. When Redding appeared for work he took a lot of good natured abuse about how he was going to get the rig started. He has a reputation for always having the machine ready to work. Redding appeared to be giving the 22-B an extra thorough greasing after he had slid unobtrusively into the cab and started his heater. Actually, he was just allowing for a long warmup. There was real admiration on the faces of the watchers when the machine caught on the first crankshaft revolution.

Help Estimate

Redding is a vital part of the team in other ways, too. When Clematis Brook takes a job on its own, as they occasionally do, he often helps figure the cost and price. One of the firm's specialties is fuel oil tank setting for buildings and institutions. When we visited the company, Duncanson and Redding were going into town to look over the job of setting a tank for the post office under limited working area and time conditions. Clematis Brook will also undertake to dig a basement at a flat rate.

Most of its income, however, is from rentals. And most of the rentals are by the day, not by the yard. At the time of our visit, the price was $80, $88, and $96 per day for the 10-B, 15-B, and 22-B respectively. Added to this is the firm's $25 moving charge.

The five most consistent renters of

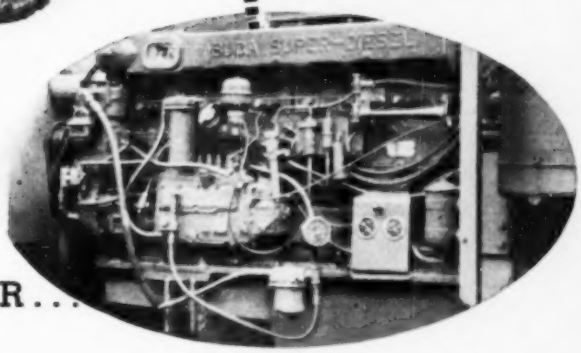
Continued on page 42

International Diesel powers Bucyrus-Erie 15-B shown trenching for sewer. Clematis Brook shovels have one-month customer backlog. Note like-new condition.

BUDA DIESELS
POWER WORLD'S LARGEST TRUCK*

*Based on total tire capacity less net weight.

Model 600 Dart — 60 Ton Capacity. Powered by two Buda 8 DAS-1125 Super Diesels



One of two Buda Super Diesels powering new Dart 600.

BAGDAD COPPER *Again* PICKS BUDA DIESELS FOR *BIG* POWER... STAMINA...LONG LIFE!

Buda Diesels' superiority was demonstrated again when Bagdad Copper Mines picked two 8 DAS-1125 Super Diesels to power their new Dart 600 truck — called the largest truck in the world.

Deep, open pit mines are tough proving grounds for engines. The Buda Diesels powering other Bagdad haulage units are delivering such standout performance that Buda was the natural power choice for this giant new truck.

Your nearby Buda Distributor can show you how Buda Diesels will increase your equipment performance and profits. Ask him today. Write for Bulletins and data. The Buda Company, Harvey, Illinois.

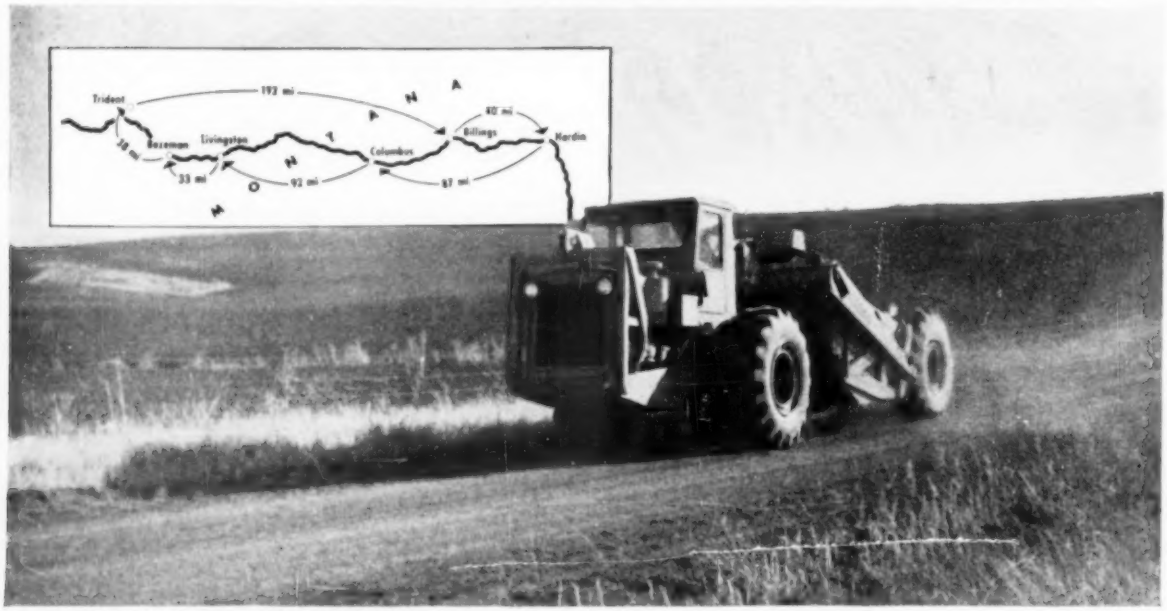
Division of Allis-Chalmers Manufacturing Company

BUDA

a Power-Full and Dependable Name in Engines

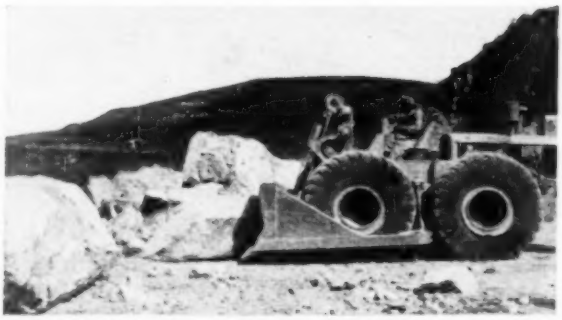
BC-32

Pictures of the month... *by LeTourneau-Westinghouse...*



IN 7 DAYS, 10 JOBS, 480 MI — Self-powered moves at 28 mph and high production resulted in a busy 7 days for this Montana-owned D Tournapull. Monday, the "D" stripped gravel from an old roadbed near Billings. Self-loading ability eliminated scarifying and cut 6 hrs from estimated time on this job . . . Tuesday, at Hardin, it leveled 5 acres of farmland in 5 hrs, 3 times as fast as could a crawler and 11-yd pan, according to contractor . . . Wednesday, it raised roadbed and finish-graded 2-to-1 slopes for a road near Columbus . . . Thursday, widened road near Livingston and filled old irrigation ditch near Bozeman . . . Friday, it completed 4 jobs 30 mi apart: (1) cut farm access road, self-loading up to 7 yds of loam in 45 seconds; (2) cleaned gravel from road ditches; (3) cut down old levee, moving 180 yds of hard clay hourly; (4) leveled field, despite sinking 4 in. into mud when loaded . . . Monday, averaged 20 mph on a 192 mi trip from Trident to Billings . . . Tuesday, leveled field, completing 1400 ft cycles every 2 min.

MOVES SAND THAT OTHERS CAN'T Finley P. Smith, clearing and leveling Florida beach property, uses 5 D Tournapulls and 3 Tournatractors for all work. He gives as typical output for each Tournatractor-loaded 7-yd "D" . . . 100 pay yds of sand hourly on 600 to 1000 ft hauls, 120 pay yds on 400 ft hauls. Says Smith, "No other scraper can move this beach sand. They're all too heavy to get traction in the poor footing."



BUILD 1 MI BREAKWATER — 90 mi south of San Diego, Calif, at Ensenada, Mexico, 6 rear-dump Tournarockers and 1 Tournatractor are extending this 130-ft-wide breakwater 5000 ft into more than 50 ft of water. Hauling over existing fill, Tournarockers make one-mile cycles with 12 pay yds every 7.7 minutes. Some rocks hauled measure 5 x 6 x 12 ft and weigh over 30 tons. Tournatractor (below) levels fill and maintains haul road. Say Equipment Owners Clark & Mansilla, "It's amazing how well these machines stand up under the rough conditions we are working in."

with performance reports from around the country

OMAHA, NEBRASKA — Filling over a muddy stream-bed, 4 D Tournapulls bring in 280 pay yds of clay hourly to start leveling a 40-acre, 100,000-yd housing site. "D's" self-load 5 pay yds . . . complete 1100-ft cycles up and down 10% grades every 4.1 min. Units belong to Willard Robinson, Omaha, a specialist in housing work. "Fine machines," he says, after using his "D's" on 10 jobs (100,000 to 300,000 yds each) in the past 2, years.

COUNCIL BLUFFS, IOWA — Tight quarters make no difference to Eblin Constr Co, blue-topping Rock Island freight line. Operators say their 5 Tournapulls are the only rigs that can work and turn in the 31 ft between farm fields and siding. "C's" turn in 15-ft radius. Competitive units need radius of 18 to 30 ft.

GALLUP, NEW MEXICO — Combined output of 198 yds hourly for 2 C Tournapulls in hard, unrooted, sunbaked clay speeds road job for Jack Adams, Los Alamos contractor. Loads of 11 yds take 35 to 50 seconds with 148 hp pusher. Haul speeds on 6400-ft cycles average 15 to 20 mph. Top speed of "C" is 35 mph.

MINNEAPOLIS, MINN. — While cat skinner must yank levers all day long, Tournapull operator only need push a button to steer or control scraper. Fatigue is greatly reduced, so output stays high all day. Machines shown belong to Ves Phillippi, Minneapolis. His 3 C Tournapulls moved 42 loads (462 pay yds) of sandy clay per 50-min hour over 1100-ft cycles . . . completed this 25,000-yd industrial plant leveling job in less than 2 weeks. 8-mile trip through city to next job took Tournapulls 40 minutes. For more information on this and other tools shown on these pages, write LeTourneau-Westinghouse Company, Peoria, Illinois.

Tournapull, Tournaracker—Trademark Reg. U.S. Pat. Off.,
Tournatractor—Trademark Pic. 499 G w

W. Va. Turnpike . . .

Continued from page 27

Section 3 (Charleston District) — Design & Supervision: Cannett, Fleming, Corddry & Carpenter, Harrisburg, Pa.

Tunnel: Singstad & Baillie, New York

Area engineer for sections one and two is Bill Hudgins, and for section three, R. W. Hearnes. L. S. Harvey is project manager for Gannett, Fleming, Corddry, & Carpenter; Robert Smith is project engineer for Capitol Engineering Corp.; and B. K. Beebe is project manager for Fay Spofford & Thorndike.

GRADING AND DRAINAGE CONTRACTS AWARDED ON WEST VIRGINIA TURNPIKE

(amounts of contracts as of August 19, 1953)

No.	Description	Contractor	Amount of Contract	Original Date of Award
8	Grading, Drainage, Substructures, Sec. 2 (Mile 9.0 to 11.0)	C. E. Wetherall Co., Huntington, W. Va.	$ 455,256	8-21-53
9	Grading, Drainage, Substructures, Sec. 2 (Mile 20 to 25)	Oman Construction Co., Inc., Nashville, Tenn.	1,330,088	1-9-53
10	Grading, Drainage, Substructures, Sec. 3 (Mile 68.3 to 71.3)	Nello L. Teer Co., Durham, N. C.	3,211,924	1-12-53
18	Grading, Drainage, Substructures, Sec. 1 (Mile 0.0 to 4.8)	Nello L. Teer Co.	699,493	7-17-53
19	Grading, Drainage, Substructures, Sec. 1 (Mile 4.8 to 9.0)	W. E. Graham & Sons, Cleveland, N. C.	1,151,189	2-26-53
20	Grading, Drainage, Substructures, Sec. 1 (Mile 11.0 to 14.0)	Ralph E. Mills Co., Frankfort, Ky.	1,438,765	7-13-53
21	Grading, Drainage, Substructures, Sec. 1 (Mile 14.0 to 20.0) Also relocation of 3.83 miles of U. S. routes 19 & 21.	Condon-Cunningham & Peter Kiewit Sons' Co., Omaha, Neb.	3,581,100	5-12-53
23	Grading, Drainage, Substructures, Sec. 2 (Mile 25 to 36)	Central Pennsylvania Quarry, Stripping & Const. Co. Hazelton, Pa. (23A)	2,159,277	2-26-53
		Latrobe Road Const. Inc., Latrobe, Pa. (23B)	1,732,694	3-26-53
24	Grading, Drainage, Substructures, Sec. 2 (Mile 36 to 50)	Latrobe Const. Inc. (24A)	1,377,145	4-24-53
		Clark-Farrell Co. & H. N. Rodgers & Sons Co., Memphis, Tenn. (24B)	2,073,160	4-30-53
		H. W. Holt & Son, Columbus, Ohio (24C)	2,379,187	4-30-53
25	Grading, Drainage, Sec. 3 (Mile 51.6 to 57.9)	S. J. Groves & Sons, Minneapolis, Minn.	5,872,662	4-30-53
26	Grading, Drainage, Sec. 3 (Mile 57.9 to 67.6)	Groves, Lundin, & Cox, Inc., Minneapolis, Minn.	3,917,738	6-15-53
27	Grading, Drainage, Substructures, Sec. 3 (Mile 71.3 to 80.3)	Ralph E. Mills Co., Frankfort, Ky. & Morrison-Knudsen Co., Boise, Idaho	6,270,100	6-15-53
28	Grading, Sec. 3 (Mile 80.3 to 88)	L. S. Coleman Co., St. Albans, W. Va. (28A)	727,073	7-13-53
		Boso & Ritchie Inc. Ravenswood, W. Va. (28B)	1,059,750	7-13-53
		Standard Asphalt & Tar Co., Charleston, W. Va. (28C)	986,997	6-1-53
		Suber & Co., Inc., & R. G. Foster, Whitmire, S. C. (28D)	1,584,460	7-13-53

Clematis Brook . . .

Continued from page 38

Clematis Brook shovels are H. W. Farrell of Belmont, O'Malley and Delaney of Waltham, R. H. Stevens of Lexington, A. J. Welch of Brighton and J. Sullivan Sons of Cambridge. To these might be added a long list of now-and-then customers.

The name of the firm, Clematis Brook Sand and Gravel Co., stems from former years when they operated sand and gravel pits in the area. At one time they worked a pit in Newton and later near Waltham's Clematis Brook, after which the company is named. They've been completely out of the sand and gravel business for many years now.

Virgil Brink is the treasurer of the small corporation and Frank Daley is the auditor. All other executive functions fall to Duncanson.

These functions are in capable hands. A one-time operator himself, Wesley Duncanson speaks with reverent pride when he talks about a good operator. And he shows the long-time contractor's admiration for an excavating job well done. This is perfectly natural for a man who has spent his life in the excavating business and whose father before him was a farm contractor in the horse and slip scraper era.

News from the Field

N. Y. Thruway Nears '54 Completion

Shortages of structural steel and cement that caused some delay in the construction of the New York State Thruway are being whipped and the main New York City-Albany-Buffalo section of the $500 million "dreamway" will probably open in 1954.

This was the opinion recently expressed by officials of the New York State Thruway Commission, builders and operators of this longest limited access road in the world.

In reviewing the progress of Thruway construction it was revealed that to August 1, 1953, contracts totaling $365.4 million had been awarded for grading, paving, and structure work on 381.1 miles of road. This figure included the cost of the 2.8-mile Tappan Zee bridge across the Hudson River between Tarrytown and South Nyack and the cost of the 55.09 miles of road and the structures already completed.

While the material shortage has proven to be a considerable problem, engineers and contractors working on the Thruway claim that it cannot be compared to the severity of difficulties caused by hydrostatic conditions in many of the upstate New York regions traversed by the Thruway.

In crossing the Montezuma swamp

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD CO.
52-54 Church Street
New York, N. Y.

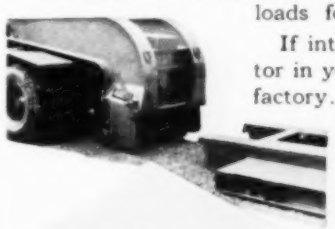
Let us DEMONSTRATE

the amazing features of the

ROGERS POWER-LIFT detachable GOOSENECK TRAILER

Our claims as to the performance of our detachable gooseneck trailer are so unusual as to arouse skepticism in some instances . . . a fact which we can well understand.

So, realizing that "*to see means to believe,*" we have equipped a demonstrator which is traveling the country actually handling loads for contractors, movers and erectors.



If interested, contact the Rogers Distributor in your vicinity or write to us here at the factory. We will then contact you for a demonstration when the trailer is next in your vicinity.

Meanwhile, we'll be glad to send you our interesting, illustrated literature.

OPERATORS detach gooseneck-unload equipment-re-attach and are "on their way"... IN AS LITTLE AS FIVE MINUTES!

EXPERIENCE builds 'em ROGERS PERFORMANCE sells 'em

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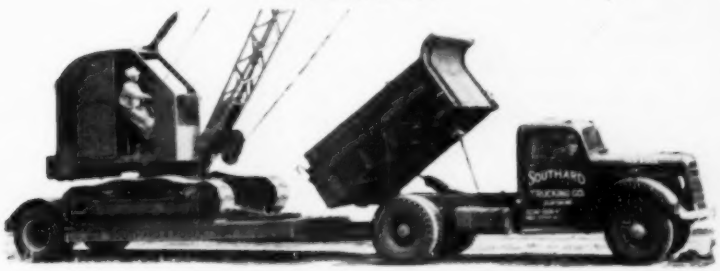
ALBION, PENNA. CABLE: BROSITES

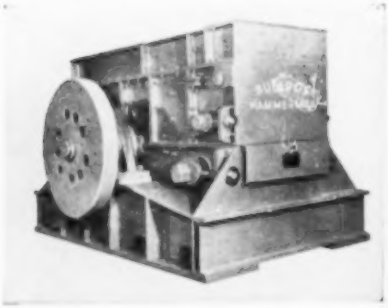
Export Office: 50 Church St., New York 7, N. Y. U. S. A. Cable Address-Brosites
136 Orchard St.



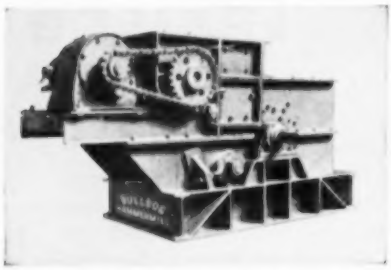
Attaching of loaded Rogers Tagalong trailer

Twice the Capacity with
15 Times the Hammer Life

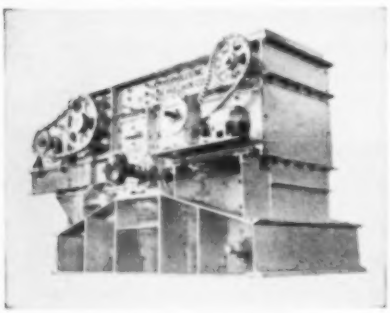
BULLDOG
HAMMERMILLS



FOR DRY MATERIALS—Stationary Breaker Plate type. Pettibone *manganese steel* hammers, liners, cage bars, and adjustable breaker plate assure the highest efficiency of any hammermill.



NON-CLOG FOR WET MATERIALS—Wet or sticky materials flow rapidly across moving breaker plate. No over-size discharge—no fine material accumulation on lower breaker plate shaft.



NON-CLOG WITH CLEANING BAR—Highest producer for exceptionally wet materials. Capacity all models illustrated, 1 to 1000 tons per hour—primary, secondary, or fine reduction.

Ask for Bulletin 534

HAMMERMILLS, INC.

Subsidiary of PETTIBONE MULLIKEN CORP.

4700 WEST DIVISION STREET
CHICAGO 51, ILL. • SPaulding 2-9300

International TD-24 crawler tractor and a mobile crane team up to root and load out stumps and logs from a portion of Project 52-7 on New York State Thruway.

Business is booming in this borrow pit on N. Y. Thruway job. International TD-24 crawler tractor pulls Euclid loader which loads out Euclid bottom dumps.

region north of Cayuga Lake, 10 to 12 feet of muck had to be excavated and replaced by stable material obtained from a nearby borrow pit before the Thruway roadbed stopped performing a nightly "disappearing act" into the surrounding mud. On the average, 500,000 cubic yards of borrow were used in building a mile of roadbed through the Montezuma area.

To construct the bridge across the Onondaga Lake outlet near Syracuse, dangerous hydrostatic conditions called for the employment of sand drains. At intervals of eight feet along the right-of-way the contractor sank 60-ft. steel tubes into the morass. Once in place, the material contained in the tubes was pumped out and replaced by coarse sand. The cylinders were then removed, leaving the sand cores. Next, the entire surface area was covered with a two foot deep layer of sand. On top of the sand, the contractor placed an amount of fill equal to the weight of the bridge approaches and maximum traffic loads.

At the end of six months, the weight squeezed the water out of the muck and up through the cores where it was pumped off. With the water removed

Continued on page 48

"Never Saw a One-Yard Machine to Compare with"

MARION 43-M

A one-yard bucket, on a 50-foot boom, makes the MARION 43-M a profitably handy machine for Fred J. Fugate, Quincy, Florida, contractor.

This dragline has been dipping into the development of the Naples area where sound planning simultaneously opens beautiful lakes and provides filler for low areas.

With more than two years' service to its credit, the 43-M has had such assignments as recovering oyster shells and marl from Horse Creek for use in street building.

Pleased by the dependability of the 43-M, its easily-operated air controls and its consistently big production, Mr. Fugate says, "I never saw a one-yard machine that will compare with it." Why not let your nearest MARION representative tell you more about the features that Mr. Fugate likes so well.

MARION

POWER SHOVEL CO.
MARION, OHIO, U. S. A.

from 3/4 cu. yd. to 45 cu. yds.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

AN ALLIS-CHALMERS REPORT

How hydraulic torque converter drive improves big tractor performance—increases job output

With a two-range transmission and hydraulic torque converter, the Allis-Chalmers HD-20 is the only crawler tractor that is capable of exerting maximum drawbar pull *at all times* . . . under all load and terrain conditions . . . without gear-shift guesswork.

Whatever the job, the operator need merely make contact with the load and then open the throttle. As the load requirements change, the hydraulic torque converter *automatically* matches the conditions with exactly the right combination of speed and pull.

This eliminates most shifting . . . leads to far more work done in a continuous work cycle . . . far longer equipment life.

BULLDOZING — Hydraulic torque converter lets Allis-Chalmers HD-20 take full advantage of available horsepower, roll bigger loads, tackle tougher dozing jobs. With full control at the throttle, operator can work safely and efficiently, regardless of terrain.

PULLING — Hydraulic torque converter drive actually multiplies torque up to four and one-half times... develops tremendous drawbar pull to start the load smoothly . . . and automatically accelerates to the highest speed that conditions permit, in either high or low range.

PUSHING — Operator just makes contact, then opens the throttle and relaxes. The HD-20 automatically matches speed to that of pushed equipment, maintains steady contact while loading, sends load off to the fill at higher speed.

DIGGING AND LOADING — With the HD-20G, the operator crowds surely and steadily, using only throttle and bucket levers. With full horsepower always available even at creeping speed, he can work effectively in mud, on hillsides or the edges of banks.

OPERATOR COMFORT AND EFFICIENCY — He chooses speed range when he starts, and he can finish most jobs without further clutching or shifting (except for reverse). Result — he works easily, yet efficiently all day long.

LONGER LIFE FOR BIG EQUIPMENT — Hydraulic cushioning reduces shock and vibration, with less strain, less wear on both the HD-20 and its auxiliary equipment, whether mounted or drawn. That means *less* downtime, *more* production time.

Hydraulic torque converter drive, exclusive as standard equipment with Allis-Chalmers, is just one of many reasons why the HD-20 assures you higher output with less upkeep. Your nearby Allis-Chalmers dealer invites you to get the full story . . . and to see it in action.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Weight — 41,000 lb.
175 net hp. at flywheel

Does the wire rope you use earn this kind of TRUST?

Typical of many, one master mechanic says, "We *always* use Hercules Red-Strand wire rope, because we know we can trust it for long life and safe service . . . every time." An inspector reports, "On a work test, we really abused Leschen rope. It *more* than satisfied our requirements."

HERCULES Red-Strand deserves it

Why is that so? Simply because *higher-than-rated quality* in Red-Strand wire rope means *greater-than-expected* safety and performance.

If you're not getting this kind of praise from your men, you should try Hercules Red-Strand. Do it, next time you need wire rope.

Be sure to get your free copy of valuable 64-page LESCHEN Wire Rope Handbook. Ask your nearby HERCULES® Red-Strand distributor . . . or write direct.

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WIRE ROPE AND SLINGS

LESCHEN WIRE ROPE DIVISION • ST. LOUIS 12, MISSOURI
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)

News . . .

Continued from page 44

and stability obtained, the contractor scraped off the overload used to provide the squeeze and went ahead with the work called for in his contract. Tested by the Michigan road method, compaction exceeded required 90%.

Although the New York State Barge canal is undergoing extensive relocation in the Fort Plain-Randall sector to provide the Thruway right-of-way in this narrow waist of the Mohawk Valley, a tie-up of water-borne traffic has not materialized.

According to B. D. Tallamy, Superintendent of the New York State Department of Public Works, also chairman of the Thruway Commission, during the first 15 weeks of 1953, 1,959,729 tons of cargo were carried on the canal, representing a gain of one-half per cent over the corresponding period last year.

While most of the work on the Albany-Buffalo portion of the Thruway is now in the paving and structure stage, clearing and grading is the basis for activity on the New York City-Albany section of the route.

In maintaining the 3% maximum grade and to keep under the maximum allowable altitude of 900 feet above sea level, numerous cuts through rock mark the right-of-way of the thruway as it passes through the Catskills, particularly in Greene, Orange, and Rockland counties.

Most of the shot rock can be used as fill in the immediate area. In Greene County, Savin Construction Co., Hartford, Conn., is moving 3 million cubic yards of rock from a mountain top and using it to fill a lateral valley bisecting the Thruway right-of-way. Shot rock is spread and compacted in the fill area by a crawler tractor.

Blessed with ideal working conditions during most of the summer, contractors on the New York City-Albany section of the route have managed to pick up time lost during a lengthy period of spring rains.

As of September 1, concrete substructure work on the Tappan Zee bridge was proceeding slightly ahead of schedule. The buoyant concrete caissons, designed under the direction of Captain Emil Praeger, are nearing completion in a basin at Haverstraw, New York. The basin will probably be flooded and the caissons floated to the installation site during the latter part of September.

Contracts have already been awarded for the construction of the Westchester County and Nyack approaches to the bridge.

As yet, toll fees have not been established. However, passenger car, bus,

Playing role of "rescuer," two P&H Truck Cranes aid salvage of sunken tuna clipper at San Diego harbor dock. Pioneer Truck Co. rushed cranes to scene.

and truck fees will probably compare to tolls now being collected on the New Jersey and Pennsylvania turnpikes.

Moles Name Winners

J. Rich Steers of New York and Glenway W. Maxon of Dayton, O., have been named as the 1954 recipients of the awards given annually by The Moles for "outstanding achievement in construction."

The announcement was made November 4 at a charter members' night dinner meeting of The Moles, a society of leading figures in the heavy construction industry, at the Roosevelt Hotel in New York City.

Excavating Engineer Microfilm Is Now Available

Microfilm of the 1952 *Excavating Engineer*, Volume XLVII, can now be purchased from University Microfilms, 313 North First Street, Ann Arbor, Mich. Cost of microfilm is $2.55, plus postage.

H. A. Reid

H. A. Reid, 56, vice president in charge of operations for the United Electric Coal Companies since 1941, died at St. Luke's Hospital, Chicago, Ill., Tuesday, October 20.

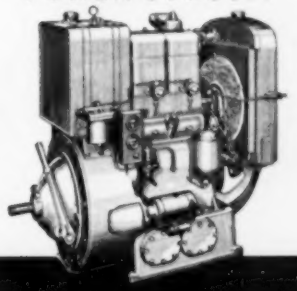
Mr. Reid, better known as "Gus" to his many friends in the coal mining fraternity, was born in Georgetown, Ill., March 15, 1897. After service in World War I his first connection with the mining industry was with U. S. Steel Corporation at their Danville, Ill., operations. In 1924 he joined The United Electric Coal Companies as a mining engineer. Subsequent promotions led to chief engineer in charge of all operations and to the vice presidency in 1941.

The engineering and construction of the Companies' Buckheart and Fidelity Mines in Fulton and Perry Counties, Illinois, respectively were under the supervision of Mr. Reid. These are two of the largest and most modern stripping operations in the country.

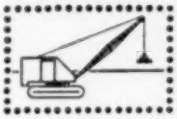
Mr. Reid's outstanding ability in his chosen field was recognized throughout the industry.

Mr. Reid is survived by his wife Helen and son Thomas. Funeral services were held at 2:00 pm Saturday, October 24 at the Presbyterian Church, Du Quoin, Ill.

Save Money
ON SCORES OF CONSTRUCTION POWER JOBS...

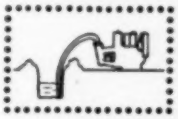


with NORDBERG Diesel Engines

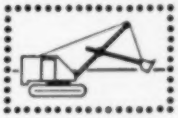


ELECTRIC POWER FOR LIGHTING OR FOR CRANE MAGNETS.

FOR ORIGINAL OR REPLACEMENT POWER IN MIXERS.



FOR DRAINAGE AND OTHER PUMPING JOBS.



FOR RE-POWERING SMALLER SHOVELS.

• THESE are just four of the scores of construction powering jobs you can handle better, at lower cost, with Nordberg Diesel Power Units. Built in 1, 2 and 3-cylinder sizes, these compact, heavy-duty units provide from 10 to 45 hp, or 6 to 30 kw for around-the-clock construction service. *Get the facts today. Clip the coupon now.*

NORDBERG MFG. CO., Milwaukee, Wis.

NORDBERG
BUILDERS OF AMERICA'S LARGEST LINE OF HEAVY DUTY DIESELS

MAIL THIS COUPON TODAY

Nordberg Mfg. Co., Milwaukee, Wisconsin

Send catalog covering Nordberg Type 4FS Diesels. I am interested in a unit for the following service: EE

Your Name _____

Company Name _____

Address _____

City _____ Zone ____ State _____

4-153-C

MOVE MORE YARDS PER DOLLAR

WITH THIS BIG-YARDAGE LOADER!

This Cat*-powered Sierra Loader with D8 Tractor and single operator is working in a borrow pit on the Madera Irrigation Canal project for H. Earl Parker, Marysville, Calif. The hardpan's like rock—you have to rip all except the very surface, but this rugged rig is taking the rough going in stride. It keeps 25 trucks busy on a 3½-mile haul. Average load per truck—8 yards. Production per 8-hour day—2000 yards. Superintendent George L. White makes this comment: "We like our loader fine. It's really a dirt-moving machine."

With this big-capacity, one-man rig, you have a setup that cuts hours and dollars off earthmoving costs. The Sierra's 42" disc plow has a "slicing" action that assures fast cutting in tough material. Its 27-foot conveyor raises and lowers quickly at a touch of the control lever. Visibility is excellent, enabling the operator to maintain the right height for high- or low-side haulers for fast loading. All controls are handy to the operator's seat. And the rig has high maneuverability—a short turning radius makes it ideal for use in short or circular pits. Like all Caterpillar-powered equipment, the Sierra Loader, with its Cat D318 Engine, is built to stay on the job day after day with a minimum of down time.

Your Caterpillar Dealer, a reliable source of service and information, will be glad to give you complete facts about this money-saving loader. Ask him to show you how it can help you move more earth for less. Call him today for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

You Ought to know About

Compressor-Truck Unit

Manufacturer: Galion Allsteel Body Co., Galion, O.

Claims: A new air compressor—dump body truck unit is announced jointly by Davey Compressor Co., Kent, O., and Galion Allsteel Body Co.

Equipment consists of a Davey Model 105 "Auto-Air" unit and a Galion Allsteel Model 12 contractors' body.

The compressor delivers 105 cfm and is of two-stage air-cooled design. It is driven direct from the truck engine by a Davey heavy-duty power take-off and occupies less than one-fourth of the truck body space.

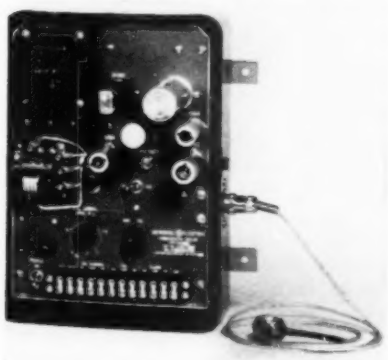
Dump body is the latest Galion high tensile steel type. It is 90 inches long and 78 inches wide, with 15 in. sides and 21 in. ends.

Compressor and body are suitable for mounting on a range of trucks.

Vibration Relay

Manufacturer: General Electric Co., Schenectady 5, N. Y.

Claims: A new protective device, which initiates a signal when excessive vibration due to unbalance occurs in large rotating equipment has been announced by the manufacturer. The vibration relay, specifically engineered for apparatus which is left unattended for long periods, can be used on such equipment as turbine or water-wheel generators, large motors, blowers, steam or gas turbines, and centrifuges.



The new relay has an operating range which allows its use at speeds from 300 to 18,000 rpm to energize warning-alarm, corrective, or shut-down devices at pre-set vibration acceleration values up to 20g. Design features permit easy calibration in the field and safe installation where dust conditions exist.

A fail-safe feature gives warning when the device itself fails, because of such things as filament burn-out of amplifier tubes, rectifier failure, fuse failure, or loss of line voltage, and will cause the normally energized relay to be de-energized until the cause of failure is corrected.

Pre-Heating Electrode

Manufacturer: Eutectic Welding Alloys Corp., 40-40 172nd St., Flushing, N. Y.

Claims: For quick heating, for annealing, heat treating, softening, burning off paint, pre-heating and other uses where acetylene torch is imprac-

NOW! "TARPS" AT DEALER COST!

BURCH *Weather-Tite* TARPAULINS

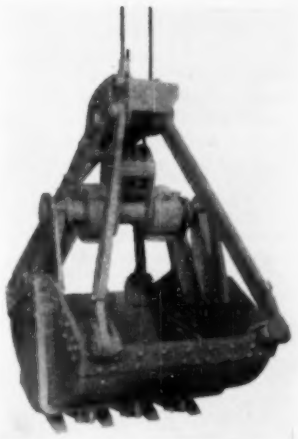
Now for the first time you can get the QUALITY BURCH WEATHER-TITE TARPAULINS in all weights, at a new low price. You are invited to write in for our new price list . . . Simply submit your request on your letterhead and you will be eligible for our dealer price list. Compare the quality—Compare the workmanship—COMPARE THE PRICE and you will specify BURCH WEATHER-TITE!

BURCH MANUFACTURING COMPANY, INC.
FORT DODGE, IOWA DES MOINES, IOWA

It All Depends on the BUCKET AT THE END OF THE LINE . . .

The bucket is usually less than one-tenth of the whole investment in your materials handling equipment. Yet, to get all the pay load you should on every pass depends more on the bucket than on anything else.

To be sure you have the right bucket for the job, let our field engineers look over your set-up. There's no charge, and their recommendations will help you get the most out of a major investment.



Write for Bulletin 403, Dept. E123

ERIE
STEEL CONSTRUCTION COMPANY
9123 GEIST ROAD • ERIE, PENNSYLVANIA

tical, or impossible, a new product called ThermoTrode has been developed. The new product is not for welding, but is to be used as a new source of instant heat. No special equipment is necessary. The ThermoTrode is inserted in an ordinary electrode holder of a DC arc welder. The new steel core electrode features a specially developed patented flux which establishes a unique type of arc. Instead of depositing the metal, you actually oxidize it with a searing blast so that the core metal disintegrates into a powder you can swiftly and easily brush off.

ThermoTrode's sharp heat cone generates a tremendous amount of heat

which may be relayed by maintenance of proper arc distance or by using a circular or weaving motion as the rod is applied. Thus you can establish a great heat in a very short time, the manufacturer claims, yet operate over a wide area. Preheating of the base metal, or heating after welding to relieve stresses, becomes a simple matter of replacing the welding electrode in your holder with the new ThermoTrode.

ThermoTrode is said to be adapted to practically every phase of welding operation where a concentrated heat source is needed—plus the added factors of speed and availability without the need for introducing "outside" heat sources such as torches, furnaces, ovens, etc. Available in $\frac{1}{8}$, $\frac{5}{32}$ and, for heavy work, $\frac{3}{16}$ inch diameters.

Shuttle Dumper

Manufacturer: Aveling-Barford, Ltd., Grantham, England.

Claims: The new three cubic yard Dumper fills the need for an earth

mover to match the output of the smaller excavators. Built primarily for off-road operation, the Dumper has abundant power, multiple speeds, rugged construction, two-way steering, and the ability to tip and shed the stickiest load even when facing uphill.

The Dumper has four speeds forward and two in reverse. The manufacturer reports that it will carry the full load—$3\frac{3}{4}$ tons—up any gradient where the wheels can grip.

Overall length of Dumper is 11-ft. 8-in. while overall height without cab is 7-ft. $6\frac{1}{4}$-in. Overall width is 7-ft. $5\frac{1}{2}$-in. Wheelbase is 6-ft. 11-in.

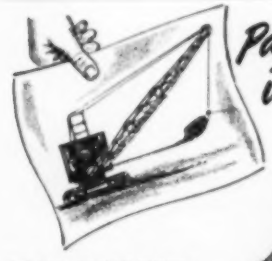
All wheels easily detachable. Driving wheels are fitted with 13.00 x 24—8-ply earthmover type tires. Steering wheels fitted with 7.50 x 16—8-ply earthmover, ribbed tires.

Scrapers

Manufacturer: LeTourneau-Westinghouse Co., 2301 N. Adams St., Peoria 3, Ill.

Claims: A new line of open-top, tractor-drawn, rubber-tired scrapers range in capacity from 10.5 to 28.5 cubic yards.

The scrapers are designed to fit any tractor-scraper job and are available



Pays for itself...

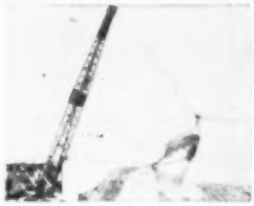
ON YOUR BOOM MACHINE

SAUERMAN SCRAPER

When you add a Sauerman Crescent Scraper to your boom machine as auxiliary equipment, you are making a profitable investment which will repay many times its moderate initial cost. This unique bottomless bucket will in many cases, handle up to 50% greater load than its regular bucket or clamshell.

On short range work, such as backfilling, grading and similar jobs where material must be moved but does not require lifting, the Crescent is simply cast from the boom tip like the regular bucket. The Crescent bites into the earth wherever it strikes and fills to capacity on the forward pull. The load literally floats along the ground to the discharge point and is deposited when the scraper is raised by the boom line.

When a job calls for digging from a river, deep pit or soft area beyond the reach of the boom, the Crescent Scraper is suspended by chains from a simple trolley that rides on a track cable extending from the boom tip to an anchorage. One drum of the machine raises and lowers this track cable, while the other drum operates the inhaul cable attached to the front of the scraper. Digging, hauling and discharge proceed as in the casting operation. Following discharge the empty scraper is lifted and gravity-returned to the excavation point by merely tightening the track cable.



Above: A $1\frac{1}{2}$-cu. yd. Sauerman Crescent used with a 1-cu. yd. dragline is lifted clear of the levee and returns to the borrow pit by gravity at 1500 fpm.

Above: Boom machine has a boom length of 110 feet and uses a 4-cu. yd. Crescent scraper, replacing a $2\frac{1}{2}$-cu. yd. dragline bucket.

Find out how other operators use Crescent Scrapers on their boom machines for greater economy, efficiency and flexibility. Write today for illustrated literature.

SAUERMAN BROS., INC.

574 S. CLINTON ST., CHICAGO 7, ILL.

in four sizes. The O-14 Carryall Scraper, which is designed for use with tractors of 70 hp or more, has a struck capacity of 8.1 cubic yards and a heaped capacity of 10.5 cubic yards. The O-19 Carryall Scraper for use with 75 or more hp tractors has a struck capacity of 12.2 yards and heaped capacity of 16 yards. The third size of the open-top line, O-23 for use with 80 or more hp tractors, carries a struck capacity of 14.4 yards and a heaped capacity of 19 yards. The Model O-35 Carryall Scraper carries a load rating of 22.5 yards struck and 28.5 yards heaped and is designed for 100 or more hp tractors.

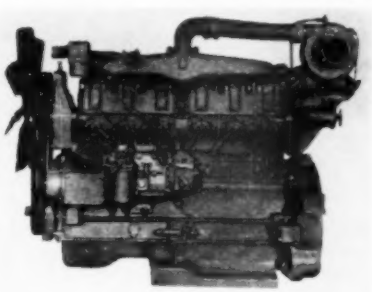
Scrapers are of welded construction throughout. Their design facilitates shovel or conveyor loading by elimination of overhead cables. The new scrapers are operated by a double drum power control unit, whose two cables work through swinging sheaves which are self-aligning. They are mounted on the front of the scraper yoke. Construction of the goose-neck allows clearance for various tire combinations.

Diesel Engine

Manufacturer: Hercules Motors Corp., Canton 2, O.

Claims: The DFXE-TS is a turbo-supercharged version of the six cylinder Diesel engine Model DFXE.

The new engine has a 5⅝-in. bore x 6-in. stroke and 895 cubic inch piston displacement. The DFXE-TS develops

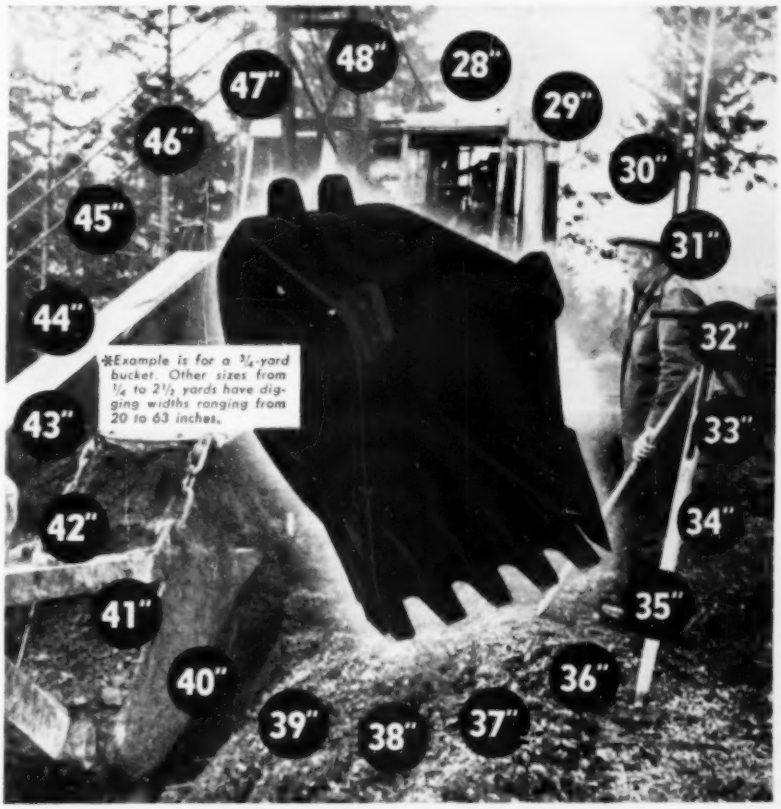


846 lbs. ft. torque at 1800 rpm and 318 hp at 2,000 rpm.

The supercharged DFXE-TS fulfills the demand for more horsepower without increasing fan-to-flywheel length. The new engine is particularly suited to power construction equipment, mining equipment, and other equipment in the 300 hp class where a compact engine is important.

DIG TRENCHES — WITH ONE MACHINE

RIGHT to the INCH

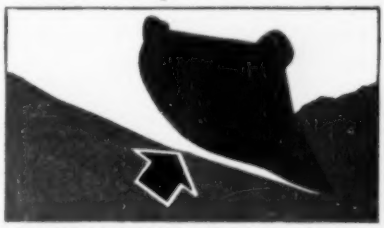


ESCO FASTBACK Hoe Dipper Eliminates Unnecessary Digging and Backfilling

The ESCO Fastback hoe dipper digs a trench the width your contract calls for—right to the inch. You don't waste time and money on unnecessary digging and backfilling—and you dig all your trenches with one machine.

*For example, the ¾-yard Fastback dipper is made in three basic widths. By changing side cutters each basic unit gives you seven different widths. Result—*one machine* equipped with three ¾-yard Fastback dippers and side cutters can dig trenches anywhere from 28" to 48" wide—to full ¾-yard capacity—without overload. Other ESCO Fastback hoe dippers give you digging widths from 20 to 63 inches.

Put the money-saving ESCO Fastback to work on your trench digging jobs. Your ESCO representative will be glad to demonstrate, or write for Descriptive Bulletin 189.



FASTBACK DESIGN eliminates heeling action—gives clean, fast dumping.

ESCO

Representatives in all Major Cities

Offices and Warehouses: Honolulu, Hawaii; Houston, Texas; New York, New York; Los Angeles, San Francisco, California; Seattle, Spokane, Washington; Centralia, Pennsylvania; Eugene, Oregon; Salt Lake City, Utah. In Canada: Vancouver, British Columbia, and Toronto, Ontario.

ELECTRIC STEEL FOUNDRY CO.

2177 N. W. 25th AVENUE, PORTLAND 10, OREGON — 712 PORTER ST., DANVILLE, ILL.

HOW TO GET
EXTRA profits
on
EXTRA jobs

BUCYRUS ERIE

If you're a contractor with only part-time blast hole work, you can cut drilling costs and increase your income with a modern Bucyrus-Erie 20-W or 22-W well drill.

These mobile, multi-purpose machines put down 4-in. to 10-in. blast holes fast and efficiently and also double on profitable sidelines like rental, contract, or water well drilling. Both the 20-W and 22-W have plenty of spooling capacity for the deeper drilling generally required in water well work.

Write today for the full story on how truck or trailer-mounted Bucyrus-Erie drills can reduce your costs and expand your profits.
26W53

BUCYRUS-ERIE CO.
SOUTH MILWAUKEE, WIS.

Engine features including forced feed lubrication by gear pump to all connecting rods, main bearings, piston pins, and rocker arm bearings; 7-bearing, counterbalanced, Tocco hardened crankshaft; exhaust driven supercharger; and heat-treated aluminum alloy pistons.

Either 12, 24, or 32 volt electric system is available. Stripped engine weight is about 3,000 lbs.

Vibrating Screens

Manufacturer: Pioneer Engineering Works, Inc., Minneapolis 13, Minn.

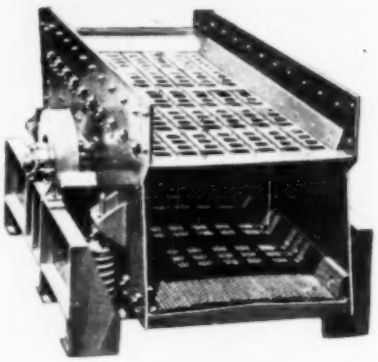
Claims: Redesigned for better service, the Mesabi type vibrating screens are now available in single deck and 2-deck in the following sizes: 4-ft. wide, 10 and 12-ft. long; 5-ft. wide, 10, 12 and 14-ft. long; and 6-ft. wide, 12 and 14-ft. long.

In the 2-deck scalping screen, the top deck is ½-in. punched plate and the bottom deck is wire mesh.

The single-deck scalping screen has a ¾-in. punched plate deck.

In the 2-deck sizing screen, both decks are wire mesh.

Standard punched plates have square openings ranging from two to eight inches, in ½-in. increments.



The main frame on all the 4-ft. screens has been redesigned to include an 18-in. car channel reinforced with 8-in. cross beams while the 5 and 6-ft. wide screens have been redesigned to include 18-in. I-beams reinforced with 8-in. cross beams.

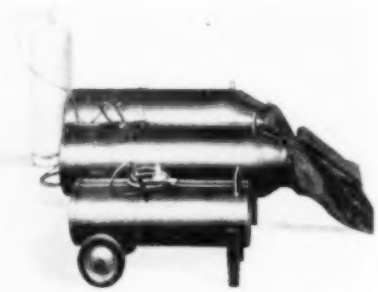
Inner and outer bearings in all sizes are SKF; the larger sizes, have heavier inner bearings than those previously used.

The wire mesh screens in the new 5 and 6-ft. wide sizes are equipped with side clamp bars plus a new center clamping strip to hold the screen securely in position and further reduce metal-fatigue failure.

Portable Heater

Manufacturer: Arthur C. Baumann, Manufacturer, 7011-21 Grays Ave., Philadelphia 42, Pa.

Claims: Heat up to 500,000 BTU's is provided by the new Eco-Temp LP gas portable heating unit with automatic firing. Gas tanks store fuel on the job, with hose connection to heater.



The unit goes instantly into operation with quick rise to temperature and wide-coverage heat that has no smoke or odor. Unit can be furnished with durable flame-proof vinyl coated canvas heat duct.

This new automatically fired heater is available in three regular sizes, 140,000 BTU's, 250,000 BTU's and 500,000 BTU's, for all ordinary heating-drying-thawing operations; and in two super-sizes, 650,000 BTU's and 950,000 BTU's for exceptionally heavy duty heat production.

Compare!

NEWCO* WIRE ROPE CLAMP & THIMBLE
*trade mark

. . . gives holding efficiency of 95 to 100%.
. . . will not collapse.
. . . no shearing of bolts.

BEARING SERVICE is many times heavier, for example, the ⅝" Newco has a ½" bearing surface! Carries a heavier load, and the original cost is easily absorbed by savings on labor and longer life. In 12 sizes.

⅜" to 1" size STEEL CLAMPS
(Approx. 80,000 PSI's)
⅛" to 5/16" MANGANESE BRONZE
(Approx. 110,000 PSI's)

See your distributor or write direct to

NEWMAN MFG. & SALES CO.
Dept. EE-12, Box 5939, Kansas City 11, Mo.

In dead end spots such as this, two-way steering proves its worth. No switching, no backing . . . straight in, swing the seat, and straight out. The "Shuttle" has the quickest "turn round" of any Dumper.

Cut haulage costs with a 'SHUTTLE'

- It's tough
- It goes places
- It's a sure tip

THE AVELING-BARFORD SHUTTLE DUMPER 4½ cu. yd. CAPACITY

Engineered for heavy duty, the time-tested and performance proved Aveling-Barford 4½ cubic yard Diesel Shuttle Dumper has all the features that make for low cost haulage over medium and short runs.

It has plenty of power, four speeds in reverse as well as forward, patent two-way steering — the operator can always face direction of travel, instantaneous tip — gravity or power assisted, seat operated differential lock, and many other valuable refinements.

Easy to handle and easy to ride it has remarkable stability over rough ground permitting the maximum speed that job conditions allow. In quarries, mine working, on public works and contracts all over the World, the Aveling-Barford Shuttle Dumper is invariably first choice for working with medium size excavators.

Get to know more of this British built Dumper . . . write for Folders Nos. 1529 and 1620.

WORLD-WIDE SPARES AND SERVICE COVERAGE

AVELING-BARFORD LIMITED
GRANTHAM ENGLAND

get more of everything but wear . . . .

WITH

BUCYRUS

BULLGRADERS—

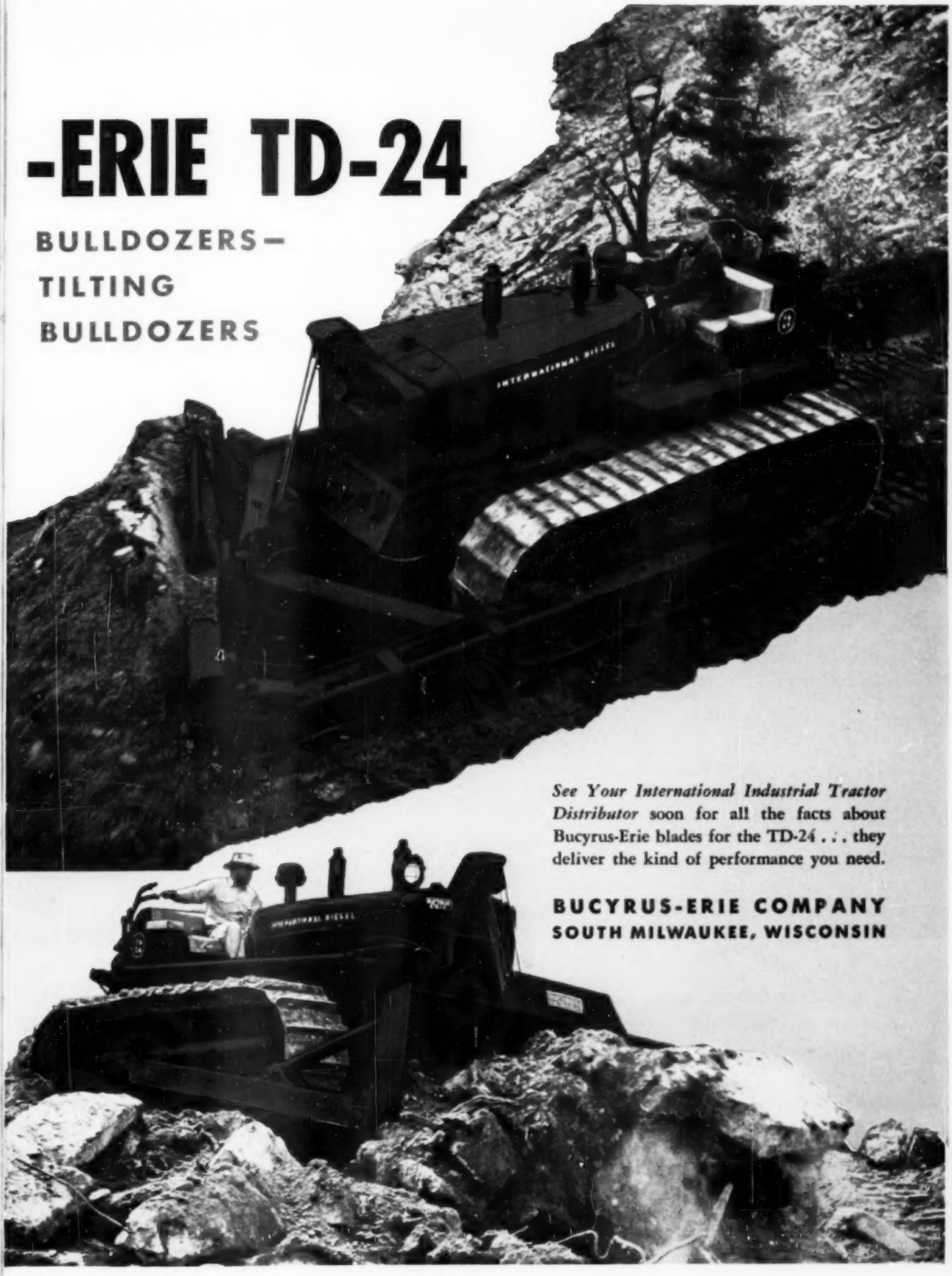
more *VERSATILITY* Bullgrader blade can be set straight ahead, angled right or left, or tilted vertically — no special tools required. Tilting bulldozer blade can be adjusted as much as 16 in. above opposite end.

more *PAYLOAD CAPACITY* Scientifically curved moldboard rolls dirt instead of pushing it — builds up bigger loads on every pass while using less tractor power. Bucyrus-Erie blade equipment fully harnesses the superior power of the International TD-24 tractor.

more *VISIBILITY AND CONTROL* Front or rear mounted winches have improved planetary drive, give operator instant-response control over blade.. Exceptional visibility lets him accurately gauge his work for fast, clean dozing.

less *WEAR* Tough, wear-resistant steels prolong the life of Bucyrus-Erie blades. Proper weight distribution with careful balance of blade to tractor puts full tractor power to work with less wear and tear on all parts.

15T53C



See Your International Industrial Tractor Distributor soon for all the facts about Bucyrus-Erie blades for the TD-24 . . . they deliver the kind of performance you need.

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

WHERE EXPLOSIVES RESEARCH PAYS OFF

To blast 305,000,000 tons of stone and nonmetal materials for America's ever-growing construction, road building, and steel industries requires more than 166,000,000 pounds of dynamite annually. Here, as illustrated above, is where explosives research pays off. Note the excellent fragmentation which minimizes secondary blasting . . . the low stone pile which increases and speeds up the production of the shovels.

Such results come not only from specially developed explosives and blasting supplies, but also by using the most modern blasting methods. Hercules' continuous research and extensive knowledge of field conditions are important to economical and efficient blasting in quarrying, coal mining, metal mining, and construction.

HERCULES POWDER COMPANY

Explosives Department, **972 King St.,** *Wilmington 99, Del.*
Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

New trade literature

Subject: **Bidding Guide**

Content: The second revised edition of *A Suggested Guide to Bidding Procedure* developed jointly by The American Institute of Architects and The Associated General Contractors of America, incorporates changes made by the two organizations to date. It is the fifth printing of this document, designed for use in connection with building and related construction, since the first edition was published in 1948. Recommended for use in private work when competitive lump sum bids are requested, and in public work so far as requirements of public authorities permit, the Guide is regarded as the greatest single accomplishment of A.I.A.-A.G.C. cooperation. The document was developed by the A.I.A. Committee on Contract Documents and a special A.G.C. committee headed by A.G.C. past-president Walter L. Couse, of Detroit, Mich. It received widespread distribution and acceptance, and from time to time changes were incorporated in the document upon recommendation of the A.I.A.-A.G.C. committee. There is no charge for single copies; quantity prices may be had on application. Request A.I.A. Document 333.

Where to get: American Institute of Architects, 1735 New York Ave., Washington, D. C.

Subject: **Belting**

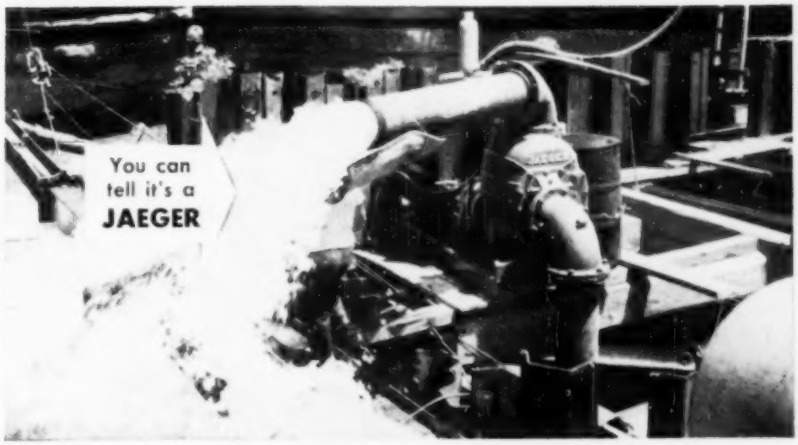
Content: A four-page brochure, illustrates and describes Thor rayon transmission belting. The new belting with rayon plies instead of conventional cotton was proved in field applications for more than four years on jobs specially selected for their severity. Results of the tests show that rayon transmission belting is far superior to similar belting manufactured in top quality with cotton plies. Request brochure A5163K.

Where to get: Goodyear Tire & Rubber Co., Akron, O.

Subject: **Wire Rope**

Content: *What's the Difference in Wire Rope?*, a new brochure available from Leschen, answers questions which may be in the minds of wire rope buyers. It explains differences in the selection of materials.

Where to get: Leschen Wire Rope Division, H. K. Porter Co., Inc., St. Louis 12, Mo.



Dewatering 58 ft. deep bridge pier coffer on Cumberland River near Gallatin, Tenn. J. M. Hickman, Contractor.

4000 gpm... at only 1500 rpm

Jaeger builds longer life into small pumps, too.

When you can move 4,000 gallons of water a minute, with diesel fuel economy *and at recommended diesel engine speed*, that's low cost pumping. Ordinary pumps can't do it but a Jaeger 10PD can — because Jaeger Sure Prime pumps are built bigger, to prime and pump at slower speeds than others. It pays off in long engine and pump life — every time.

1½" to 10" — gas, diesel, electric. Catalog P-10.

THE JAEGER MACHINE COMPANY 553 Dublin Avenue Columbus 16, Ohio

LOADERS • COMPRESSORS • MIXERS • PAVING MACHINES

Pick A Money Maker

When you are trying to decide on the Dragline Bucket for your use, base your judgment on these 3 important points: (1) Digging Ability, (2) Long Life, (3) Low Repair Expense. For over 42 years Omaha Dragline Buckets have passed these tests in actual work accomplished in the field. Write for catalog giving specifications of 4 available types.

DRAKE-WILLIAMS-MOUNT • OMAHA, NEBR.

Tomorrow's Shovels

Bucyrus-Erie's progressive design brings the modern shovel front end to the quarry, mine, and large construction industries.

Only Bucyrus-Erie offers these features in front end equipment on heavy-duty shovels.

BOOM— Two section — light upper section, rugged lower section. No excess weight. Weight and strength concentrated where needed and close to center of rotation.

Lower boom section part of main machine, through twin strut connections to A-frame. Boom feet wide spread — no sway braces or cables. No boom jacking.

TYPE OF HOIST— Twin dual, single-part ropes, one attached to each side of dipper. Power automatically concentrated where needed on dipper lip to break through bank obstructions. No dipper bail.

SADDLE BLOCK— Cylindrical. Rubber cushioned against impact during fast plugging of swing. No binding with flexed dipper handles.

HANDLE— Single, tubular, one-piece, can rotate in saddle block. No handle twist possible.

CROWD MACHINERY— Located on revolving frame, close to center of rotation. Position reduces swing inertia. Accessible, protected.

TYPE OF CROWD— Quiet, positive, independent twin rope crowd and retract. Adapts itself to tubular handle rotation — low friction — less crowd power required.

CONVERTIBILITY— Shovels fully convertible to draglines of the independent motor type — no operating clutches or brakes.

There are many more reasons why these modern Bucyrus-Eries with Ward Leonard Variable Voltage control are the finest heavy-duty excavators ever built. Get the full story today. 50L53C

BUCYRUS ERIE

South Milwaukee
Wisconsin

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES—2½ YDS. & UP

Bucyrus-Erie 120-B electric dragline, mounted on caterpillars; 100 ft. boom; 4¾ cubic yard bucket; has recently been reconditioned and in excellent condition, has been used mostly for rehandle. Reason for sale: less rehandle in new coal pits and have two other machines; specifications and photographs sent on request. Northwestern Improvement Company, Colstrip, Montana.

2 Marion 111-M draglines, 90' boom, twin 6-71 GM Diesel Engines, long crawlers, wide pads; one available in January '54, the other available in Spring '54; these machines in excellent condition; recently completely overhauled; real bargain. Sallisaw Stripping Company, Box 668, Fort Smith, Arkansas.

Used Bucyrus-Erie 375-B dragline excavator, caterpillar mounted, 165' boom, 9½ cu. yd. lightweight bucket. Ward Leonard control, 3 phase, 60 cycle, 2300 volts; good operating condition, can demonstrate; approximately $20,000 worth of spare parts available; attractive price; Southeastern location. Box 3552

Model 625-E Page Electric 9 cubic yard walking dragline, with 150 ft. boom, serial no. 178, located Central Ohio; machine working and in excellent condition; price: $130,000 net, loaded on cars; complete list of spare parts not included in price. Box 3551

Complete dragline equipment including 90 foot boom less bucket removed from Bucyrus-Erie 100-B, serial #23067; Price: $5000. Morrison-Knudsen Company, Boise, Idaho.

SMALL SHOVELS, CRANES, DRAGLINES—UP TO 2½ YDS.

2 model 50-B Bucyrus diesel powered machines, without front end equipment, powered with Atlas Diesel engines, Serial #9929 and #10873; these machines immediately available, as is, located near Seattle, Washington. Clyde Equipment Company, Seattle, Washington.

Bucyrus-Erie 33-B shovel, serial NBR 16366; Caterpillar D-11000 diesel engine, 26" treads, 1¼ yd. dipper; good condition; machine and engine have operated nine months since complete overhaul; priced reasonable; FOB car near Hibbing, Minn. Subject to prior sale.
Bucyrus-Erie 37-B shovel, dragline combination, serial NBR 24330; Caterpillar D-13000 diesel engine, 30" treads, 1¾ yd. dipper, 1½ yd. Bucyrus-Erie AX dragline bucket, 50' boom, Kohler 1500 watt light plant; entire machine very good condition; a good buy; FOB car near Hibbing, Minn. Subject to prior sale.
A quantity of 37-B parts also available at cost.
WRITE WIRE PHONE
WM. H. ZIEGLER CO., INC.
2929 University Ave. S. E.
Minneapolis 14, Minnesota
GLadstone 7971

Lima 1201 combination shovel and dragline, Cummins diesel engine, 80' dragline boom. Location middle west; priced to sell. Box 3548

88-B Bucyrus-Erie comb. shovel and dragline, Diesel, $90,000
80-D Northwest shovel, dragline & backhoe, Diesel $37,000
54-B Bucyrus-Erie comb. shovel & dragline, Diesel $43,000
22-B Bucyrus-Erie comb. shovel, dragline & backhoe, Diesel $20,000
10-B Bucyrus-Erie shovel only, gas $ 8,000
Write for complete Equipment For Sale Bulletin.
Guy F. Atkinson Company, 10 W. Orange Ave., Phone: PLaza 6-0300, South San Francisco, Calif.

Bucyrus-Erie 15-B dragshovel, ½ cu. yd. Buda gas engine, 20 treads, 3 years old, only used one year.
Quick-Way combination shovel and crane on Coleman 4 wheel drive truck.
Michigan ⅜ cu. yd. truck shovel with 30' crane attachment.
Keystone model 18-A dragshovel gas engine in good condition.
Stuart M. Christhilf & Co., Inc.
134-136 West Mt. Royal Avenue
Baltimore 1, Maryland

2 Page class RD, 3-yd. dragline buckets; 1 Bucyrus class 14 boom, 60' 2/14' insert; Bucyrus class 14 dragline, 3500 series, for parts. Located Casper, Wyoming. 1 Lorain 75A shovel, 3500 series, for parts. Located Coalmont, Colorado.
CONSTRUCTION & POWER MACHINERY, Inc.
270 - 23rd St., Brooklyn 15, N.Y. Tel. South 4-4900

54-B Diesel Bucyrus-Erie Shovel, Serial No. 35011; price: $22,500 F.O.B. cars. Inspection can be made at the Douglas Mine, Chisholm, Minnesota.

Koehring crane model 301, serial #1276; combination dragline, clamshell and crane, 45' boom; no buckets; engine B-2 Wisconsin gasoline electric starter and generator 12 volt system; completely rebuilt last year; can be seen working everyday; pictures on request.
STUART M. CHRISTHILF & CO., INC.
134-136 West Mt. Royal Avenue
Baltimore 1, Maryland

Northwest model 25: 6: 80D; 95. Manitowoc 6500; 4500 new—will rent. Bucyrus 54-B; Monighan 5W; 7W; 9W; 450.
A. W. Nevers Phone 32 Mt. Pleasant, Iowa

MISCELLANEOUS EQUIPMENT

FOR SALE — DREDGE
Location — Lake Linden, Michigan
Steel hull 56 ft. wide, 110 ft. long, overhanging deck 8 ft. wide each side; weight of hull stripped 400 tons; suction ladder 137 ft. long will dig 115 feet below water line; main pump 20 inch inlet and discharge, 1250 ℄W, 25 cy. motor; pump lined, shell in 2 halves vertically with front and back unlined heads; runner is 55 inch diameter on 8 inch diameter pump shaft; 2—4 drum winches, one of the drums for ladder hoist the other 7 control lines for movement of dredge which is not self-propelling; dredge has high pressure motor driven water pumps and boiler for heating and low pressure steam; electricity supplied at 2300 volts, lines coming into dredge on towers attached to pontoons carrying the discharge pipe; rated capacity 10,000 cubic yards per day. For prints and further information write to:
Calumet Division CALUMET & HECLA, INC.
Purchasing Department Calumet, Michigan
Telephone 2000 — Extension 62

Trenchers: Buckeye C-10, C-15, 160, 203 & 406; P&H model 1030; Barber-Greene 44C; Cleveland 95, 110, 140 & 320; Parsons 221, 250 & 306. Air Compressor Rental Company, 19615 Nottingham Road, Cleveland 10, Ohio.

2 Bucyrus-Erie 42T Blast Hole Drills: serial #48222 & 48223; shipped April 1947; Electric for AC 440/3/60 power supply; 36" wide cat treads, hydraulic jacks, electric lights, operator's cab; drilling tools—9", 3¾x4½-7API joint; cable equipment; located central Indiana. Also a #12 bit dresser with complete bit heating equipment will sell separately or with drills. Box 3550

New equipment parts for sale: Northwest, Marion, Koehring, Byers, International Tractor, including lagging, fairleads, shovel-fronts, shovel teeth, sheave blocks, etc. Liberal discounts—we will pay the freight also Euclid and Conway Mucker parts, some Bucyrus-Erie parts. Jack Palo Equipment Company, Azusa, California. Phone: Fleetwood 42551.

Stedman 36" two cage Disintegrator Machine D, #1554, V-Belt drive, two extra rotors; like new. Price: $2500.
Stedman 54" four cage Disintegrator machine #1553, V-Belt drive; excellent condition. Price: $4200.
BLUE ROCK, INCORPORATED
Box 110, Washington C. H., Ohio
Phone 201—Greenfield, Ohio

Loraine 40 truck crane on A.C., $4400; LaCrosse 25-ton low-bed drop-deck trailer, $2400; Byers 83 hoe and crane, 1948, $10,500; Haiss ½-yd. bucket, $450. Phil Anzelmo, East Rutherford, New Jersey, Phone: Prescott 9-4143.

Four Bucyrus-Erie 42-T blast hole drills: #36113 and #36114 shipped August 1944; #40553 shipped January 1945; #40554 shipped April 1945; all machines electric powered, A.C. 440/3/60; provided with tools suitable for drilling 9" or 9⅞" holes with tool joints 3½x4½-7API. Price: $15,000 each, f.o.b. Located in Indiana. Box 3553

EQUIPMENT WANTED

Backhoe attachment and 15 to 25 ton Lowboy for Osgood model 200; give condition, location and price first, correspondence. Kirkpatrick Construction Corp., P.O. Box 380, Hopkinsville, Kentucky.

HELP WANTED

We Need Several Experienced Dragline Operators

We offer you: Top-notch living and working conditions for large American company in Central America; $500-600 per month wages depending upon qualifications; expenses paid going; after 1 year's work, expenses paid returning to U. S. We cannot accommodate your family immediately but if you become a permanent member of our crew, after proving ability, arrangements can be made for them.

We ask from you: Good background of experience operating ½-yd. to 2½-yd. draglines; good physical condition; good habits.

Send letter now giving your qualifications to

Box 3547
EXCAVATING ENGINEER
South Milwaukee, Wis.

How a CAT* No. 12 grades to **fine tolerances**

The 16-acre Skyway Drive-in Theater, Nashville, Tennessee, must be resurfaced each spring before the season opens. McDowell & McDowell, of Nashville, do this job with a Caterpillar No. 12 Motor Grader. It pulls all the ditches and spreads crushed rock to a depth of 6 inches on the roads and 4 inches on the ramps. The project calls for moving 29,000 tons of stone, and the grader handles 1000 tons a day, making 4 passes over each line of ramp and road.

For good drainage and smooth parking a job of this kind demands grading to very close tolerances. And the Cat No. 12 "hits it on the nose." How is it possible for the big yellow machine to work within ½ inch of grade?

Perfect balance of power, frame and blade is one reason. Others are positive, easy-acting controls, constant mesh transmission and full range of blade positions. But most important of all is job visibility. The operator *doesn't have to stand* to see his work. From the driving seat he can watch the front wheels and both ends of the blade, keeping them in exact adjustment.

Fuel economy, simplicity, durability and long life are other advantages of the No. 12 Motor Grader. No wonder Roscoe McDowell says: "If a fellow expects to stay in business he had better get Caterpillar equipment. It really does the job."

Your Caterpillar Dealer has the right machine for your needs. He'll demonstrate it for you right on your own job, and he'll back its profitable work life with reliable service and genuine parts. Call him today!

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

NOT in the Contract

The family was objecting to their son's girl, insisting that he ought to be a little more particular about the company he kept.

"I'm sorry, Dad," said the boy, "but that's the best girl I can get with the car we've got."

Old Maid Steno: "Oh, Myrtle, I'm going out tonight with a used truck salesman."

Second Ditto: (Reassuringly) "What is the difference as long as he's healthy?"

On entering a room in a Washington hotel, a woman recognized a well known official pacing up and down and asked why he was there.

"I am going to deliver a speech," he said.

"Do you, as a rule, get nervous before talking to a large audience?"

"Why I never get nervous," he replied.

"In that case," demanded the woman, "what are you doing in the ladies' room?"

Judge: "How did the trouble start?"

Defendant: "Well, judge, she asked me to play a round and I didn't know she was a golfer."

A prospective country school teacher and her girl friend hired a livery rig to visit the members of the school board.

"You won't have any trouble with this horse," the liveryman explained. "He's perfectly gentle. But be careful not to get the rein under his tail."

When they returned he asked whether the horse proved entirely satisfactory. "Oh, perfectly," the prospective school teacher responded. "We did have a couple of showers, but my friend held her umbrella over his tail."

It was a beautiful night. The moon was full. The scenery was romantic. He held the lovely creature close to his manly chest and whispered in her shell-like ear, "Darling, I love you as no one has ever loved before."

"I can't see much difference," she replied.

Maid: "There were two men outside the window while you undressed, Madame."

Madame: "That's nothing. You should have seen the mobs when I was younger."

"These sausages you sent me are meat at one end and bread crumbs at the other," said Mrs. Andrews.

"Yes, madam," replied the butcher, "in these times it is difficult to make both ends meat."

A man entered a Texas saloon with a piece of paper in his hand. In reply to a question, he said, "It's a list of the men I can whip."

"Is my name on there?" demanded a broad-shouldered shovel operator menacingly.

"Yes."

"Well, you can't whip me."

"Are you real sure?"

"I sure am."

"Very well," replied the other, "I'll take your name off the list."

Jim: "I tell you there ain't any romance in marriage any more."

Sim: "I'll tell you what to do. When you go home tonight, take along two dozen roses and a pound or two of candy and when she meets you at the door, give her a great big kiss. Then you see the difference in her disposition."

Then this happened:

Jim: "Hello, darling, here's a big kiss for you, also two dozen roses and two pounds of candy. How did things go today, honey?"

"Oh, Jim, it's been terrible. Johnny came home with his clothes all torn and spattered with mud from top to bottom. I burned the roast to a crisp, and scorched your best white shirt, and now you come home drunk."

"I sell underthings to a nudist colony."

"What kind of underthings?"

"Cushions."

A local newspaper carried the following announcement: Mr. and Mrs. John Jones who have been married for seven years are the proud parents of a new son, the first-born. He has been named Rusty.

EXCAVATING ENGINEER

"Boss' orders, Red. He said to paint everything that was rusting!"

Notes from the manufacturers

Cleaver-Brooks Co., Milwaukee, Wis., has appointed Elmer H. Wegner, formerly acting works manager, to general manager of manufacturing. Wegner came to Cleaver-Brooks early this year as director of purchases. He formerly was with the Ladish Co. in this same capacity for 25 years. Aiding Wegner will be Glenn W. Leupold with the responsibilities of works manager.

Euclid Road Machinery Co., Cleveland, O., has appointed John C. Dix district manager for Euclid operations in Georgia, Alabama, Florida, and the eastern part of Tennessee. Dix has been active in engineering and the construction equipment field for over eight years. He has been associated with Euclid, the Gradall Division of Warner & Swasey, and Lima Shovel and Crane in engineering and sales promotion activities and served several years with the U. S. Army Engineers. Five Euclid distributors, maintaining a total of 14 sales and service offices, are located in Dix's territory. Tri-State, distributor for Georgia, maintains offices in Albany, Atlanta, and Augusta. In Alabama, Euclid is represented by Ray-Brooks Machinery Co. of Montgomery and Tractor and Equipment Co. of Birmingham. Florida-Georgia Tractor Co., handling Euclid equipment in Florida, has offices in Jacksonville, Lakeland, Miami, Orlando, Tampa, and Tallahassee. In Tennessee, Power Equipment Co. operates in Knoxville, Kingsport, and Chattanooga. Dix will make his headquarters in Atlanta.

Koehring Co., Milwaukee, Wis., has announced two transfers in its sales department and in one of its subsidiaries, Parsons Co., Newton, Ia. R. E. Bansemer, assistant sales manager at Koehring has been named sales manager for Parsons and M. O. Messenger, sales manager at the Iowa plant, has moved to Milwaukee to take over the assistant sales manager's duties in the parent company. Both appointments became effective on Sept. 1. Bansemer joined Koehring Co. in 1923 and has held posts in some years as a district sales representative, he was named assistant sales manager in 1950. Messenger production, service, and sales. After joined Parsons in 1939 and progressed from the shop to purchasing, service, and sales to his last post.

Construction Machinery Div. of Chain Belt Co., Milwaukee, Wis., announces the following personnel changes in its sales organization. Robert G. Kuhnmuench has been appointed western district manager. Kuhnmuench started with Chain Belt Co. as a student engineer in 1946, and has had various service and sales assignments. He has been eastern district manager since March 1952. Replacing Kuhnmuench as eastern district manager will be Richard Seaman, who joined Chain Belt Co. in 1946. Prior to his present position, Seaman was connected with sales work, most recently holding the position of assistant to the sales manager.

White Motor Co., Cleveland, O., has announced that construction has started in suburban Exton, Pa., on new manufacturing facilities for its recently-acquired Autocar Division. White's investment program in Exton, planned to replace Autocar's present plant at Ardmore, Pa., will total more than $2 million. The new construction is expected to be ready for occupancy early in 1954.

WELLMAN *Williams Type*

FAST BUCKET OPENING SPEEDS OPERATIONS

• Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

Want Facts?

Write for free descriptive bulletins.

CLAMSHELL • DRAGLINE
CUSTOM-BUILT BUCKETS
STONE AND WOOD GRABS

THE WELLMAN ENGINEERING COMPANY
7000 Central Avenue
Cleveland 4, Ohio

are you using hardfacing effectively ?

BE SURE—READ AMSCO'S NEW CATALOG ON HARDFACING ALLOYS

Whatever the application, whenever you are in doubt about what hardfacing alloy to use, you can reach for the new Amsco Catalog for the answer. It gives you complete analyses, metallurgical information, and other pertinent data about Amsco's line of automatic and manual hardfacing alloys. You can look up the right rod to use for hundreds of the more common applications. And for those extra tough jobs, you'll find the section on How to Select a Hardfacing Alloy indispensable. Although it's written by welding engineers, this new catalog is easy to understand and to apply its suggestions to your own operations.

It's FREE—write to Amsco today for your copy

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION

373 East 14th Street · Chicago Heights, Ill.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.

Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

"COMPLETELY PLEASED" WITH HIS ALL-CAT* QUARRY

This flagstone quarry at Amazonia, Mo., is entirely Caterpillar-powered. The 1½-yd. Link-Belt Speeder and 500-ft. Gardner-Denver compressor in the illustration are driven by Caterpillar D13000s. Also on the job are a track-type D8 Tractor and two rubber-tired DW10s. This Cat team produces 2250 tons in a nine-hour day, 24 days a month, for a naval ammunition depot.

George W. Kerford Quarry Co. is the owner. Al Larson, superintendent, explains his company's standardization this way: "I know Cat machines are good, and I'd never think of changing from a product I'm completely pleased with."

Many quarrymen find that it pays in cold cash to standardize on Caterpillar equipment because it stays on the job. Standardization pays in other ways, too: in increased operator familiarity and efficiency, and in a single, reliable source for parts and service. That source is your nearby Caterpillar Dealer, who has factory-trained mechanics and a full line of genuine Caterpillar parts.

All Caterpillar Engines deliver full power on money-saving No. 2 furnace oil. Whether idling or fully loaded, they don't foul up. Leading manufacturers can supply these tough, quality-built Diesels in their equipment. Or your Caterpillar Dealer can install them when you repower. 12 sizes of engines and electric sets are available up to 500 HP and 315 KW. Ask your dealer about the units that are best suited to your needs.

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

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SPECIFY CAT POWER FOR HIGH-PROFIT PRODUCTION